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UNIVERSITY OF TORONTO

President's Report

FOR THE YEAR ENDING
30TH JUNE, 1929

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PRESIDENT'S REPORT

1928-1929

To the Governors of the University of Toronto:

GENTLEMEN:

I beg to submit the following report on the academic work of the University and University College during the twelve months ended June 30, 1929.

The total staff of the University and University College numbered 712, of whom 107 were professors, 74 associate professors, 51 assistant professors, 138 lecturers, associates (in medicine and dentistry) and instructors in the College of Education, 2 directors, 1 director of field work, 339 demonstrators, fellows and instructors with sessional appointments. They were distributed as follows:

	Professors	Associate Professors	Assistant Professors	Associates	Lecturers	Directors	Assistant Directors	Instructors	Other Sessional Appointments
University (Faculty of Arts)	36	24	19	—	20	—	—	—	88
University College	14	11	5	—	12	—	—	—	7*
Faculty of Medicine	24†	12	19	18	13‡	—	—	—	173
Faculty of Applied Science	14	13	7	—	11	—	—	—	41
Faculty of Household Science	2	—	1	—	3	—	—	—	9
Faculty of Forestry	2	2	—	—	1	—	—	—	—
Faculty of Music	—	—	—	—	4	—	—	—	1
Faculty of Dentistry	13§	6**	1††	12	2	—	—	—	21
Public Health Nursing	—	—	—	—	11‡‡	1	—	—	—
Social Service	—	—	—	—	9§§	1	1	—	—
Ontario College of Education	4	7	—	—	14	—	—	18	—

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36

*1 also in Applied Science
†1 also in University
‡1 also in Dentistry; 2 also in Ontario College of Education
§1 also in Medicine
**1 also in Medicine
††1 also in Medicine
‡‡4 also in Medicine; 1 also in Dentistry
§§1 also in University

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In Victoria College there were:

Professors	12
Associate Professors	8
Lecturers	2
Instructors	1
Fellows	3

In Trinity College there were:

Professors	14
Lecturers	3

In St. Michael's College there were:

Professors	12
Lecturers	14

I regret to report the death of the following:

William Henry Vander Smissen, M.A., Ph.D., emeritus professor of German; Clarence Leslie Starr, M.B., M.D. (Bellvue), LL.D., (McMaster), professor of surgery; Peter Gillespie, B.A.Sc., C.E., M.Sc., professor of civil engineering;

Guy George Hume, D.D.S., professor of orthodontia; Sir Bertram Windle, M.A., M.D., Sc.D., LL.D., F.R.S., special lecturer in ethnology.

On his retirement from the chair of German in University College on June 30th, 1913, I made mention of the services of Professor Vander Smissen, and I now would recall again the fact that with his death on January 3rd, 1929, an accomplished scholar passed away and a devoted son of the University of Toronto.

Dr. Starr died after a brief illness on December 25th, 1928; a few months before it would have been thought that he was in his prime and had a great work before him still to accomplish. Appointed in 1921 as the first so-called full-time professor of surgery Dr. Starr through many difficulties reorganised the department of surgery, and stimulated a promising group of young surgeons from whom much is to be expected in the future. By his skill, his administrative ability, and his integrity of character he had won the respect of colleagues and students who still regret what seems to us our premature loss.

Very suddenly on May 26th, 1929, Professor Gillespie passed away. He was one of the most beloved men in the University, a teacher of unusual ability and an engineer thoroughly respected in the profession. The memory of his kindly personality will linger long, especially in the Faculty of Applied Science.

Dr. Guy Hume died on the 9th of June, 1929, in the prime of life and in the fullness of his powers, greatly regretted not only by many in the University but by a large circle of friends.

Sir Bertram Windle died suddenly on February 14th, 1929. In Great Britain and in Ireland he had had a most distinguished career first as professor of anatomy in the University of Birmingham, then as dean of that faculty of medicine, and later as President of Cork College. He was widely known as a scientist and as a writer on religious subjects. Since 1920 he held in St. Michael's College the important chair of anthropology and cosmology. For six years he gave a series of twelve lectures annually in the University on ethnology to overflowing audiences to whom he had the power of presenting historical and scientific subjects in a most attractive manner.

The following retired:

William Stafford Milner, M.A., professor of Greek and Roman history.

For thirty-eight years Professor Milner has been on the staff of University College which he has served with fidelity and distinction. With a thorough grasp of political problems he endeavoured to impress upon his students the inner meaning of the history of Greece and Rome, and not a few of the most distinguished graduates of University College look back to him as one who first taught them appreciation of that world to which our present civilisation owes so much. He is followed into retirement with the affection of his colleagues.

The following resigned their positions:

Andrew Hunter, M.A., B.Sc., M.B., Ch.B. (Edinburgh), professor of biochemistry; James Metcalfe MacCallum, B.A., M.D., C.M., professor of ophthalmology; George Malcolm Smith, M.A. (Oxon), professor of history; Horace Bradbury Speakman, D.Sc. (Manchester), professor of zymology; Alexander Grant Brown, M.A. (Oxon.), associate professor of ancient history; James W. Coran, D.D.S., associate professor of operative dentistry; William Goldie, M.B., associate professor of clinical medicine; Earle Douglas MacPhee, M.A., B. Educ. (Edin.), associate professor of psychology; John Hamilton Parkin, B.A.Sc., M.E., associate professor of mechanical engineering; Frederick Adam Cleland, B.A., M.B., assistant professor of obstetrics and gynaecology; James Forrester Davison, B.A., LL.B. (Dal.), LL.M. (Harv.), assistant professor of Roman law and jurisprudence; George Hunter, M.A., B.Sc. (Glasgow), assistant professor of pathological chemistry; Duncan Neil Maclennan, M.D., C.M., assistant professor of ophthalmology; George Sills Young, B.A., M.B., assistant professor of medicine; John A. Bothwell, D.D.S., associate in dentistry; Benjamin

O. Fife, D.D.S., associate in dentistry; Bertram Reuben Gardiner, D.D.S., associate in dental surgery and anaesthesia; Henry George Robb, D.D.S., associate in dental surgery and anaesthesia.

The resignations of these gentlemen have been received with regret and I take this opportunity of expressing the thanks of the University to them for the valuable and in some cases distinguished service which they have rendered.

To the great regret of the University Professor Andrew Hunter left, after fourteen years of distinguished service in teaching and research, to become professor of biochemistry in the University of Glasgow.

Professor J. M. MacCallum was professor of therapeutics from 1891 to 1907, became associate of ophthalmology in 1903, associate professor of ophthalmology in 1909, and on the retirement of Dr. Reeve took the headship of the department of ophthalmology in 1914. He also represented the University for many years first on the Ontario Medical Council and then on the Dominion Medical Council. Throughout this long period Dr. MacCallum has with his wide experience and ripe judgment given devoted service to his *Alma Mater* and has earned her warm gratitude.

Professor George M. Smith who resigned his chair of modern history was one of the most valuable members of the younger staff, and will be greatly missed both in the Council and in the class room.

Professor Speakman resigned the chair of zymology which he had held since 1919 to undertake the very important duties of director of the new Ontario Research Foundation for which his experience and scientific attainments have particularly fitted him.

Leave of absence was granted to the following:

Robert William Angus, B.A.Sc., professor of mechanical engineering; James Alfred Dale, M.A. (Oxon), professor and director of the department of social service; Frederick William Marlow, M.D., C.M., associate professor of gynaecology; James Forrester Davison, B.A., LL.B., (Dal.) LL.M. (Harv.), assistant professor of Roman law and jurisprudence; Miss Eva M. McMillan, Ph.B. (Chicago), lecturer in household science; Miss Charlotte Frances Valentine, M.A., lecturer in household science.

The following new appointments and promotions were made during the year:

In the Faculty of Arts—Appointments:—Malcolm William Wallace, M.A., Ph.D. (Chicago), principal of University College; Herbert Spencer Jackson, A.B. (Cornell), professor of mycology; Marcus Donald Campbell Tait, B.A. (Oxon), assistant professor of Greek; Norman Jamieson Endicott, B.A., lecturer in English; Robert Finch, B.A., lecturer in French; Edgar McInnis, B.A. (Oxon), lecturer in History; Louis Alexander MacKay, M.A., lecturer in Latin; Jan Gabriel Perold, M.A., lecturer in political economy; Louis Shere, M.A. (Manitoba) lecturer in political economy.

Promotions:—Robert Strachan Knox, M.A. (Aberdeen), B.A. (Oxon), from an associate-professorship to a professorship in English; Eric Trevor Owen, M.A., from an associate-professorship to a professorship in Greek; George Oswald Smith, M.A. (Oxon), from an associate-professorship to a professorship in Latin.

Fulton Henry Anderson, B.A. (Dal.), M.A., Ph.D., from an assistant-professorship to an associate-professorship in philosophy; William Harold Trevorrow Baillie, M.A., M.D., from an assistant-professorship to an associate-professorship in mammalian anatomy; George Henry Duff, M.A., Ph.D., from an assistant-professorship to an associate-professorship in plant physiology; John Richardson Dymond, M.A., from an assistant-professorship to an associate-professorship in systematic zoology; William Stanley Funnell, M.A., from an assistant-professorship to an associate-professorship in chemistry; Harold Boyd Sifton, M.A., Ph.D., from an assistant-professorship to an associate-professorship in plant morphology and ecology; Ellis Thomson, B.A.Sc., from an assistant-professorship to an associate-professorship in mineralogy; William John Webber, B.A. (Cantab), from an assistant-professorship to an associate-professorship in mathematics.

Sperrin N. F. Chant, M.A., from a lectureship to an assistant-professorship in psychology; Andrew Robertson Gordon, M.A., Ph.D., from a lectureship to an assistant-professorship in chemistry; William John Knox Harkness, M.A., from a lectureship to an assistant-professorship in limnobiology; John Henry Iliffe, M.A. (Cantab), from a lectureship to an assistant-professorship in the history of industrial art; David Anton Frederick Robinson, M.A., from a lectureship to an assistant-professorship in mathematics.

In the Faculty of Medicine—Appointments:—Charles Herbert Best, M.A., M.B., D.Sc. (Lond), professor of physiology; Henry Borsook, M.B., Ph.D., lecturer, biochemistry; Ernest James Clifford, M.B., lecturer, bacteriology; Neil McKinnon, M.B., lecturer, hygiene and epidemiology, School of Hygiene; Miss Mary Ross, B.A. (Dal.), M.A., lecturer, vital statistics, School of Hygiene.

Promotions:—William Ludlow Holman, B.A., M.D., C.M. (McGill), from an associate-professorship to a professorship in bacteriology; Horace Bradbury Speakman, D.Sc. (Manchester) from an associate-professorship to a professorship in zymology; William Lipsett Robinson, M.B., B.A. (McM), from an assistant-professorship to an associate-professorship in pathology; William Albert Scott, B.A., M.B., from an associateship to an assistant-professorship in obstetrics and gynaecology.

In the Faculty of Applied Science—Appointments:—Carson Frederick Morrison, B.A. (Sask), M.Sc. (McGill), lecturer, civil engineering: municipal and structural.

Promotions:—Ernest Waldemar Banting, B.A.Sc., from an assistant-professorship to an associate-professorship in civil engineering; Albert Russell Zimmer, B.A.Sc., from an assistant-professorship to an associate-professorship in electrical engineering.

In the Faculty of Household Science—Appointments:—Miss Mary A. Copus, M.A., lecturer; Miss I. L. Courtice, lecturer.

In the Ontario College of Education—Appointments:—Miss Bertha Bassam, B.A. (Qu), lecturer, library science; Miss Annette Marsh, lecturer in art.

Promotions:—George Augustus Cornish, B.A., from an associate-professorship to a professorship in methods in science; William Chalmers Ferguson, B.A., from an associate-professorship to a professorship in methods in modern languages; William James Lougheed, M.A., B.Paed., from an instructorship to an associate-professorship in methods in mathematics.

In the Department of Social Service—Appointments:—Edward Johns Urwick, M.A. (Oxon), acting director; Miss Berta Hamilton, M.A. (St. And.), lecturer.

The total number of students registered in the University, in Colleges and Faculties, in 1928-29 was 6,051, distributed as follows:

				Men	Women	Total
Faculty of Arts				1,838	1,489	3,327
University of Toronto	450	238	688			
University College	756	602	1,358			
Victoria College	357	403	760			
Trinity College	145	134	279			
St. Michael's College	142	128	270			
Registered twice	12	16	28			
Faculty of Medicine				671	75	746
Faculty of Applied Science and Engineering				583	3	586
Faculty of Household Science				...	167	167
Ontario College of Education				251	288	539
Faculty of Forestry				66	...	66
Faculty of Music				19	15	34
School of Graduate Studies				286	128	414
Faculty of Dentistry				228	21	249

In Departments there were registered 371, distributed as follows:

Department of Social Service	3	84	87
Department of Public Health Nursing	...	208	208
University Extension (Occupational Therapy)	...	55	55
University Extension (Course for Graduate Nurses)	...	21	21
Registered twice	45	32	77
	3,900	2,522	6,422

In addition there were 2,845 persons registered in the Department of University Extension in courses and at provincial centres which are referred to in detail in Appendix A (14).

The figures may be further analysed as follows:

FACULTY OF ARTS

University of Toronto

	Men	Women	Total
Teachers' Courses and Summer Session	211	191	402
Occasional Arts students	239	47	286
	450	238	688

University College

	Men	Women	Total
First year undergraduates	284	175	459
Second year undergraduates	180	165	345
Third year undergraduates	139	112	251
Fourth year undergraduates	126	116	242
Occasional students	27	34	61
	756	602	1,358

Victoria College

	Men	Women	Total
First year undergraduates	81	108	189
Second year undergraduates	119	110	229
Third year undergraduates	88	100	188
Fourth year undergraduates	68	81	149
Occasional students	1	4	5
	357	403	760

Trinity College

	Men	Women	Total
First year undergraduates	52	44	96
Second year undergraduates	46	37	83
Third year undergraduates	30	27	57
Fourth year undergraduates	16	25	41
Occasional students	1	1	2
	145	134	279

St. Michael's College

	Men	Women	Total
First year undergraduates	64	42	106
Second year undergraduates	35	38	73
Third year undergraduates	24	26	50
Fourth year undergraduates	16	20	36
Occasional students	3	2	5
	142	128	270

FACULTY OF MEDICINE

	Men	Women	Total
First year undergraduates	82	11	93
Second year undergraduates	117	10	127
Third year undergraduates	130	17	147
Fourth year undergraduates	126	8	134
Fifth year undergraduates	96	15	111
Sixth year undergraduates	95	10	105
Candidates for Degree of B.Sc. (Med)	5	1	6
Candidates for D.P.H.	10	1	11
Post Graduate students	7	1	8
Occasional students	3	1	4
	671	75	746

FACULTY OF APPLIED SCIENCE AND ENGINEERING

	Men	Women	Total
First year undergraduates	199	1	200
Second year undergraduates	160	1	161
Third year undergraduates	125	1	126
Fourth year undergraduates	99	...	99
	583	3	586

FACULTY OF HOUSEHOLD SCIENCE

	Men	Women	Total
First year undergraduates	...	55	55
Second year undergraduates	...	42	42
Third year undergraduates	...	38	38
Fourth year undergraduates	...	30	30
Occasional students	...	2	2
	...	167	167

ONTARIO COLLEGE OF EDUCATION

	Men	Women	Total
Students in attendance	107	226	333
Extra-mural students	25	38	63
Students in B.Paed. course	119	24	143
	251	288	539

FACULTY OF FORESTRY

	Men	Women	Total
First year undergraduates	22	...	22
Second year undergraduates	22	...	22
Third year undergraduates	12	...	12
Fourth year undergraduates	10	...	10
	66	...	66

FACULTY OF MUSIC

	Men	Women	Total
First year undergraduates	6	10	16
Second year undergraduates	5	2	7
Third year undergraduates	6	3	9
Candidates for Mus. Doc. degree	2	...	2
	19	15	34

SCHOOL OF GRADUATE STUDIES

	Men	Women	Total
Candidates for Ph.D	57	23	80
Candidates for M.A	83	53	136
Candidates for Ch.M	1	...	1
Candidates for M.A.Sc	7	...	7
Candidates for M.Arch	1	...	1
Candidates for C.E	3	...	3
Candidates for Mech.E	1	...	1
Candidates for E.E	2	...	2
Candidates for D.Paed	54	8	62
Candidates for M.S.A	14	...	14
Graduate students	63	44	107
	286	128	414

FACULTY OF DENTISTRY

	Men	Women	Total
First year undergraduates	23	...	23
Second year undergraduates	27	...	27
Third year undergraduates	52	1	53
Fourth year undergraduates	66	1	67
Fifth year undergraduates	54	1	55
Candidates for the Degree of B.Sc. (Dent)	6	...	6
Occasional students (Dental Nurses)	...	18	18
	228	21	249

DEPARTMENT OF UNIVERSITY EXTENSION

	Men	Women	Total	Grand Total
B.A. Course				
Summer Session:				
Regular	79	76	155	...
Occasional	10	10	20	...
Teachers' Classes:				
Toronto:				
Regular	121	79	200	...
Occasional	6	3	9	...
Hamilton:				
Regular	15	22	37	...
Occasional	4	14	18	...
Fort William:				
Regular	1	6	7	...
Occasional	4	9	13	...
Windsor:				
Regular	4	4	8	...
Occasional	0	2	2	469
Specialists' Courses				
Summer Session:				
Regular	8	...	8	...
Occasional	1	...	1	9

DEPARTMENT OF SOCIAL SERVICE

	Men	Women	Total
First year full-time students	...	23	23
Second year full-time students	2	12	14
Part-time students	1	49	50
	3	84	87

DEPARTMENT OF PUBLIC HEALTH NURSING

	Men	Women	Total
Full-time students	...	31	31
Part-time students	...	177	177
	...	208	208

The degrees conferred were:

	Men	Women	Total
LL.D. (Honorary)	1	...	1
D.Litt. "	1	...	1
Ph.D	7	5	12
M.A	44	30	74
M.D	405	25	430*
Ch.M	1	...	1
M.A.Sc	4	...	4
D.Paed	3	...	3
M.S.A	2	...	2
B.A	204	248	452
B.Comm	35	5	40
M.B	11	4	15
B.Sc. (Med)	4	1	5
B.A.Sc	88	...	88
B.Arch	11	...	11
B.H.Sc	...	27	27
B.Paed	22	3	25
B.Sc.F	9	...	9
Mus. Bac	2	...	2
LL.B	3	...	3
D.D.S	56	...	56
B.Sc. (Dent)	5	...	5
B.S.A	31	1	32
B.V.Sc	18	...	18
Phm.B	100	7	107
	1,067	356	1,423

*Including 360 conferred upon graduates who held the M.B. degree.

The constant demands from within and from without for accommodation and for additional departments of study, repeated with more or less urgency until they are either met or discarded, often make one ask whether the visit of a fairy goddess bringing millions of money, as she often does to American universities, would really be a blessing. At first sight she would be hailed as a benefactress, and be given a warm welcome. The day probably will come when wealthy Canadians will wish to have their names added to the already worthy roll of benefactors of the University of Toronto. Meantime it is useless to draw up very comprehensive plans of the ideally desirable; we must be content to provide for the most insistent requirements. Should some benefactor offer us $3,000,000—not an extravagant suggestion in an American university circle—the money might at once be spent in such a way as to do little more than give easy space to Botany, the Library, Applied Science, History, Economics, Psychology, University College residences, and the physical and social activities of the women of the University, to say nothing of the Royal Ontario Museums. Three million dollars is a staggering sum, and yet were it available the Governors could use it at once without the waste of a dollar or being guilty of extravagance. Depressing though this constant iteration of the needs for more accommodation is, it is necessary for the Governors to keep in mind this external side of the development of the University.

The erection of buildings is probably the channel in which in a State university private benefactions can carry the most permanent benefit to the people at large. They are more likely to be architecturally attractive than those built at the expense of the State, because the donor having his name associated with the structure will usually spend more money upon it than is allowable from public funds. For expansion in teaching the State may be relied upon. Additions to teaching departments and the creation of new chairs are forced upon it by the natural progress of education and the intellectual life; and they can usually be met by comparatively small expenditure; but a laboratory or a library involves such large capital outlay that even the best disposed government must hesitate often until the building is long overdue. Thus a provincial university must exercise something of the spirit of the thrifty housewife who is grieved at the sight presented by her boys in patched or shrunken clothes. The moralist says that there are some compensating advantages, but it is doubtful how far poverty itself has been an aid in bringing up her family. At any rate the University of Toronto has been justified of her children, but she is still and probably will continue to be subjected to more discipline in the *res angusta domi* than is good for her.

The Legislature has dealt in a kindly way with the Provincial University, and I believe that the Government will always listen to the reasonable requests that we may present to them for the welfare of this great institution. It rests upon us to give proof that we make adequate returns to the intellectual, spiritual, and economic life of this province for the large amounts of money that are from time to time made available by the Legislature. That we do so can hardly be questioned, for this province has been served well by the graduates of the University of Toronto, and the increasing respect in which it is held by universities of the world is an external proof of the quality of the work done in the institution by staff and students.

Naturally one is asked whether the pressure is not due to an overcrowding of students, and whether if we were more rigid in our entrance requirements we should not get relief. Unfortunately the situation cannot be met so easily. Most of the pressure is due to developments that in the nature of the case must take place in a great modern university. Laboratories and libraries are necessities for professional and postgraduate as well as undergraduate work in Arts. Except Applied Science, in which during the past few years there were reduced numbers, no other professional faculty shows any decided tendency to increase. The largest numbers are in the pass courses in Arts and in the Teachers' courses. These latter have shown a gratifying growth, and professors always have expressed their satisfaction with the kind of response given to their efforts by these mature and earnest students. While they lay a burden, willingly borne, on the departments, it can be met by additions to the staff, and their instruction is given at such a time that they do not increase the congestion of laboratories or libraries.

There is, however, a large element which is below university rank in the pass classes of the first year, and in my judgment the time is at hand when the university should affirm once again, as it did years ago when the other universities of the province hesitated to follow, that the standard of entrance to Arts, and to the professional faculties, should be honour matriculation. But it need not be expected that this reduction will materially lessen the pressure on space. By far the largest portion of the work of the first year is done in the colleges. Fewer instructors would be needed in college subjects, and mathematics would be greatly relieved. But the Arts work as a whole and the professional faculties would continue to make the same demands as at present.

It would, however, be of great educational advantage to the province to have all the work of the standard of the pass first year in Arts done in the High Schools. Young men and women would be more mature on coming to the university, and at the end of the first year there would be fewer disappointments which are often of serious consequence in the life of the student. Increasing experience leads me to reaffirm more strongly than ever the advisability of having this change introduced as soon as possible.

During the past year there have been as usual a number of resignations from the staff of persons, who after having given some years of excellent service have left for other Canadian or American universities, one to return to a chair in the Old Land, and some to enter upon other activities. The loss is felt by the University, but we cannot complain if those who have served us well leave for higher promotion than is possible for them here at the time. The effective attraction of a higher salary when a professor is feeling the burden of educating a young family often lies in the immediate relief that is hoped for, but it must not be supposed that by any means all those who are invited do leave this university, nor is the fact of removal to be taken as a proof of greater distinction in those who go than in those who remain. A moderate amount of change is good for any institution, and hitherto we have been able to draw to our service year after year recent graduates, as well as experienced professors, from some of the leading universities on both sides of the ocean. We often forget how rich we are in talent until the periodical call comes to some member of our staff.

The amount of the annual expenditure of the University on salaries is about 58% of the total, which compares very favourably with other universities in this respect, but the greater universities of the United States, which usually draw most powerfully have a scale of salaries which so far we have been unable to approach.

The advantages of this place are manifold, and not the least is the opportunity offered of hearing distinguished lecturers from elsewhere who draw interested audiences, and who in more direct contacts with the teaching staff do much to emphasise newer phases of their subject and bring personal stimulus. During the past few years some of the leading experts of the world in physics, chemistry and other sciences, in history and literature also, have visited us. A list of the extra-curricular lecturers of the past year is given later in this report.

Probably we are more defective in the cultivation of the fine arts than other universities of our standing. Hart House has done much for the men students, but very little has been done for the women students. This city appreciates music, there is a fine Conservatory owned by the University, and there are regular and much appreciated organ recitals, but there should be some person whose business it would be to discover musical talent in the student body and to develop it. Interest in the other fine arts also is developing in Toronto. In the Archaeological Museum we have one of the really great fine art museums of this continent (in the worst way, unfortunately, in need of more space), and there are the beginnings of what is sure to be a good picture gallery at the Grange. We need a liason professor who will help students to understand the principles of art and to illustrate them from our galleries. Our homes in Canada are being built and furnished with greater taste than formerly, and our people need to realise that the appreciation of the beautiful may be associated with simplicity.

The importance of modern architecture has led to the lengthening to five years of the training given in the University for this profession.

The investigation of the natural resources of this very rich province has occupied for years and increasingly the attention of many of the staff, and it would be difficult to estimate the results of their work. Investigation is being conducted on the ores, and in the forests; men are co-operating with the Colleges at Guelph in agriculture and veterinary science; they are studying fishery problems, and the economic conditions of some of our basic industries. Here, however, I should like to emphasise the need of scientific Botanic Gardens for Toronto. In South Africa I found excellent Gardens in every city, and visitors from England are surprised that in this respect we are so backward in Eastern Canada. For years Professor Thomson has been seeking to meet this need by promoting conjoint effort of city and university. The beauty of our ravines would be greatly enhanced and the richness of our flora much increased by the establishment of such Gardens. At no great expense the city would find its attractiveness heightened for our own people, and for our rapidly growing inflow of visitors every summer, by a well laid out botanical park for the maintenance of which it would be natural to expect a good deal of private support.

Most gratifying is the growth of the School of Graduate Studies in which last year there were enrolled 91 students from other provinces of the Dominion than Ontario, and in addition there was a good representation from countries beyond our bounds. This infusion of life from other centres is welcomed as bringing new interest to our own graduates and to the Graduate School. Opportunities are afforded these students for meeting together socially, and a few of the women find rooms in university residences, but the School will not do its best until larger headquarters are provided. Each year offers additional proof of the value to the university and to Canada of the postgraduate fellowships which, through the generosity of friends, have now for a good many years been open to students from other Canadian universities.

It is a significant statement of the Dean of Education that so many of the teachers of the Schools now hold university degrees, but unfortunately we have not our proportion of specialists in the High Schools, and that not because the scholarship of our graduates is not equal to that of other universities of the province. It does seem that it might be an advantage to have one external examination for specialists to be taken by all applicants not only from this province but from elsewhere.

Through our Extension Department the number of teachers in Toronto and other centres studying for a degree has been steadily rising. Last year 119 teachers entered and 34 graduated, being enrolled for instruction in Toronto, Hamilton, Fort William and Windsor. From these the inspectors of the public schools are being chosen more regularly than before. In Britain adult education has long attracted the attention of leading men and women, and last August an important conference on this phase of education was held in London. In Toronto work of this type, leading to no diploma or degree, has been proceeding apace, as is shown by the fact that 1,488 attended classes in a great variety of subjects in Toronto and other urban centres.

The University is deeply indebted to Professor Urwick for having again, in the continued absence of Professor Dale through ill-health, taken the burden of the directorship of the Department of Social Service. He recommends that the curriculum should be reorganised to give more fundamental courses, and that graduates should if possible be induced to enter on a profession for which urgent calls for help come from many cities of the Dominion.

Also under Miss Russell investigation into problems of nursing education is being carried out earnestly and wisely notwithstanding the very limited amount which the University is able to spend upon that department.

From the Connaught Laboratories comes the usual report of widespread and developing activities. Such extraordinary results have been obtained from the use of diphtheria toxoid that the control of diphtheria is now quite feasible in any country. Advice on questions of public health is given in the School of Hygiene in addition to the preparation and wide distribution of the products of the Laboratories.

It is a pleasure to report, as I have almost uniformly been able to do, that the general health of the students is extraordinarily good, and that the standard of the second year is always higher than that of the same group in the first year. The one regret is that the lack of a women's building makes it impossible to do as much for the women as for the men, especially in the second year. This need has been so often referred to that I hope we may soon find some means of meeting it. The University is fortunate in those who have the oversight of the health, the social and the athletic activities of men and women undergraduates.

For the spirit in which athletics are conducted the universities of Canada have been highly commended in the Bulletin just issued by the Carnegie Foundation on "The Present Situation of Athletics in American Colleges and Universities." Some two years ago the investigator spent several days on the grounds and in Hart House looking for himself into the actual conditions of sport. At that time he expressed a very favourable opinion of what he saw, so that the terms of the report have not occasioned any surprise, but it is most gratifying to have this comment from an independent outsider who forms his judgment after comparison with other universities on this continent. It is to be hoped that "what we have we'll hold". Our strength is in the quality of the oversight and direction of our athletics as well as in the healthy minded interest of our graduates.

In Hart House also there is fine co-operation on the part of the faculty and graduates with the warden and his efficient staff. Early in the year there was presented to the House by Canon and Mrs. Cody a Speaker's chair in memory of the late Maurice Cody, a most suitable memorial of one who was deeply interested in the debates and other activities of the undergraduates. Also Professor Wrong with his family made a gift to the House of $5,000 in memory of his two sons, both graduates of this university, Harold, who fell in the war, and Murray, who died last year very early in a brilliant career in Oxford, the proceeds to be devoted to the stimulation of appreciation of art.

Indications of the quality of the scientific and literary output of the staff come constantly from many quarters. One of the most recent was the election of Professor Lash Miller as an honorary member of the American Electrochemical Association, an honour which he shared with four others, one of whom was Mr. Edison.

During the session the following special lectures were delivered:

The Marfleet Lectures by Professor William Bennett Munro, of the department of Government, Harvard University, on "Some Constitutional Analogies and Contrasts", "Party Organisation and Practical Politics", and "City Government in the United States and Canada"; three lectures inaugurating the Alexander Lectureship by Dr. Louis Cazamian, Professor of English Language and Literature at the Sorbonne, University of Paris, on "Parallelism in the Recent Development of English and French Literatures"; three lectures on "Old Injected Rocks, their Character and Origin" by Dr. J. J. Sederholm, Director of the Geological Survey of Finland; two lectures on "General Strikes, Trade Unions, and the Law", and "Present Day Developments in English Jurisprudence" by A. L. Goodhart, Esq., K.C., M.A., LL.M., Lincoln's Inn, London, England, editor of the "Law Quarterly Review"; two lectures on " L'histoire de la langue et l'histoire de la civilisation" and "L'origine des langues romanes" by Professor Wilhelm Meyer-Lübke of the University of Bonn; a lecture on "The Continuity of Rome" by Sir Rennell Rodd, M.P., British Ambassador to Italy 1908-1919; a lecture on "Some Practical Conclusions from Scientific Research in Dental Construction" by Dr. Alfred Gyse, professor of prosthetic dentistry and dental histology in the University of Zurick; two lectures on "Hungary in the Old Empire" and "The New Regime" by Stephen Czako, Esq., LL.D., J.D., Royal Hungarian Ministerial Vice-Secretary, Budapest; two lectures by Monsieur Pierre Franck, Ingénieur en chef de l'aéronautique Française on "Electric and Radio apparatus for Aviation" and "Blind Flying"; two lectures on "Bentham and the Fragment of Government, 1776" and "Burke and the American Revolution" by Professor Ernest Barker of the University of Cambridge; the Balfour Lecture in Medicine on "The Surgical Diseases of the Stomach" by Dr. Donald C. Balfour of Rochester, Minn.

Six lectures and discussions were given in connection with the department of physics on "Band Spectra" by Professor R. Mulliken of the University of Chicago.

The ten fortnightly recitals on the organ in Convocation Hall by the University Organist, Dr. F. A. Mouré, have again been most successful.

A special convocation was held on November 7th, 1928, for the purpose of conferring the honorary degree of Doctor of Laws upon the Right Honourable Sir Austen Chamberlain, K.G., Secretary of State for Foreign Affairs, and the honorary degree of Doctor of Letters upon His Excellency Paul Claudel, Ambassador of France to the United States.

During the past year the university has received the following benefactions, totalling $505,056.23:

From the E. C. Whitney Bequest, $394,348.27; Eaton Endowment, $25,000; Estate of the late James Harris, James Harris Scholarships, $25,000; Laura Spelman Rockefeller Memorial for Child Welfare, and premium, $10,000 and $14.47; Estate of the late Mrs. E. A. Wintercorbyn, Wintercorbyn Bequest, $8,158.36; Donations in the Faculty of Dentistry: J. P. Bickell, $3,000; Anonymous donor, $1,800; Ash-Temple Company Limited, $250; Ontario Dental Association, $250; Royal College of Dental Surgeons, $250; Canadian Dental Dealers Club, $150; Estate of the late Dr. R. W. Rutherford, Dr. James Page Rutherford Medical Research Fund, $5,000; Graduate Fellowships: Imperial Oil Company, $500; Sir Edward Kemp, $500; Colonel R. W. Leonard, $500; Robert Simpson Company, $500; Canadian Pacific Railway, $1,500; University Schools Scholarships: H. J. Crawford Memorial, $1,000; Dr. T. M. Porter, $1,000; Dr. T. M. Porter (gift of F. S. Corrigan, Esq.,) $1,000; Sir John Eaton Memorial, $120; Langford Rowell Scholarship, $100; Maurice Cody Memorial, $75; Flavelle-Peacock Lectureship: Sir Joseph Flavelle, $1,250; E. R. Peacock, Esq., $1,250; Hugh Innis Strang Memorial Scholarship, $2,497.25; Joseph Henderson Memorial Scholarship, $2,035; Morley Wickett Scholarship, $2,000; Political Science Scholarship, $1,400; Margaret Anna Brock Scholarship, $1,000; Social Service Council of Ontario Scholarships, $800; Jenkins Brothers Limited, scholarship in engineering, $500; Robert Bruce Scholarship, $463.40; Sir Edmund Walker Scholarship, $450; S. R. Parsons Scholarship, $250; Maurice Cody Memorial Scholarship, Modern History, $200; Robert Simpson Company Limited Scholarship, $150; Boiler Inspection and Insurance Company Scholarship, in mechanical engineering, $150; Jardine Memorial Prize, English verse, $100; Darling and Pearson Prize, in architecture, $100; Toronto Brick Company Prizes, in architecture, $100; McCaul Scholarship in Classics: Principal M. Hutton, $25; George H. Fraser, Esq., $25; A. M. Stewart, Esq., $25; Squair French Library Fund, $65.52; Mathematics Scholarship, Professors Beatty and Pounder, $50; Dr. R. A. Reeve Prize, $50; Hon. Charles McCrae for Dent McCrea Scholarship, $50; British Association Advancement Science fund, for prize books, $33.96; University College Alumnae Prize in English, $10; Professor F. Tracy, prize in ethics, $10.

Under the chairmanship of the late Honourable Sir Edward Kemp, K.C.M.G. a committee of friends of the late Maurice Cody raised the sum of $50,000 for the purpose of establishing Memorial Research Fellowships and Scholarships in the University of Toronto "designed to encourage the study of Canadian economic conditions and to secure through careful investigation the facts necessary to understand questions arising from national growth and changing conditions". The first appointment has been made on this munificent foundation.

A very large meeting (over 700 members) of the Modern Language Association of America held its sessions in the University for three days in December, 1928. It was regarded as one of the most successful meetings of this association, and by our various modern language departments as being of great value to their work.

All of which is respectfully submitted.

R. A. Falconer,
President.

November 14, 1929.

APPENDIX A

(1) Report of the Principal of University College.
(2) Report of the Dean of the Faculty of Medicine.
(3) Report of the Dean of the Faculty of Applied Science and Engineering.
(4) Report of the Dean of the Ontario College of Education.
(5) Report of the Secretary of the Faculty of Household Science.
(6) Report of the Dean of the Faculty of Forestry.
(7) Report of the Dean of the Faculty of Music.
(8) Report of the Dean of the School of Graduate Studies.
(9) Report of the Dean of the Faculty of Dentistry.
(10) Report of the Director of the School of Hygiene.
(11) Report of the Librarian.
(12) Report on Research.
(13) Publications.
(14) Report of the Department of University Extension and Publicity.
(15) Report of the Director of the Department of Social Service.
(16) Report of the Director of the Department of Public Health Nursing.
(17) Report of the Director of the Department of Military Studies.
(18) Report of Health Services.
(19) Report of the Warden of Hart House.
(20) Report of the Director of the Connaught Laboratories.
(21) Statement regarding the Museum of Archaeology.
(22) Statement regarding the Museum of Biology.
(23) Statement regarding the Museum of Geology.
(24) Statement regarding the Museum of Mineralogy.
(25) Statement regarding the Museum of Palaeontology.

(1) REPORT OF THE PRINCIPAL OF UNIVERSITY COLLEGE

(*Professor M. W. Wallace, M.A. Ph.D.*)

The retirement of Principal Maurice Hutton at the end of last session marks the conclusion of an epoch in the history of University College. For almost half a century he had occupied the chair of Greek: for almost thirty years he had been Principal. No man has left the mark of his influence more indelibly impressed on the college, and graduates and undergraduates alike have long regarded him with pride and affection. He retires from active service with the warm good-will of his colleagues and former students.

Professor W. S. Milner, the oldest remaining member of the staff, resigns his chair of Ancient History at the end of the present session. A graduate of University College in 1881, he was appointed to the staff in 1889, and has made a profound impression on successive generations of students. Many a classical graduate gladly recognises that to Professor Milner he owes his earliest interest in the fundamental questions of politics and government. That the study of Greek civilisation is a unique instrument of education for many of the ablest minds in our modern world, he has never doubted. He has found nothing narrow or cramping in the ideal of a university course concentrated on a single great civilisation particularly as revealed in a very few of its great books and great men. Our department of Classics suffers a serious loss in Professor Milner's retirement.

Professor Grant Brown of the same department has also resigned his chair in order to devote his whole time to business responsibilities. Professor Brown graduated from University College in 1903, and after spending two years at Oxford joined the staff of the college in 1905. Few members of the faculty came into more intimate contact with their students. Professor Brown's resignation will be deeply regretted not only by his colleagues but by the many students who had come to appreciate his worth whether in study groups or his own home.

Mrs. Haddow and Mrs. Creighton have both resigned from the department of English. Mrs. Haddow after a brilliant course in University College and subsequently at Oxford joined our staff some ten years ago: Mrs. Creighton began her teaching work here two years ago after previous experience in the University of British Columbia. Both were excellent teachers whom we are sorry to lose.

Professor W. R. Taylor, head of the department of Oriental Languages, has been granted leave of absence for the session 1929-1930. Professor Taylor is to lecture in the American School of Oriental Research in Jerusalem, and to carry on his own research work.

In February last the Alexander Lectureship, founded in honour of Professor W. J. Alexander, was inaugurated by Professor L. Cazamian of the Sorbonne in a course of three lectures delivered in Convocation Hall. The subject of the lectures was 'Parallelism in the recent development of English and French Literatures'. The second course will be given next session by Professor H. W. Garrod, Fellow of Merton College, and formerly professor of poetry in the University of Oxford.

A course of twelve public lectures was given by members of the staff of the college during the past session on Thursday afternoons at five o'clock, and on almost every occasion the West Hall was entirely inadequate to accommodate those seeking admission. It is proposed to offer a similar course next session.

Through the generosity of various friends of the College a number of new scholarships have been founded which are open for competition at the Honour Matriculation examinations in June. One of the largest gifts ever made to the University for scholarship purposes is that of Mrs. James Harris in memory of her husband who died in January last. This munificent gift consists of $25,000 in the form of long-term six per cent. bonds. The Alumni Association of University College has given us four matriculation scholarships, and single scholarships have been given by the Chairman of the Board of Governors, Mrs. Cody, Mr. J. J. Gibson of the Board, and Mr. S. R. Wickett. These generous gifts should serve a great purpose in the life of the college, especially in view of the fact that heretofore the college has been singularly weak in this respect.

The members of the staff have purchased and presented to the Senior Common Room a silver tray, kettle, tea-pot etc., of unusual interest. The purchase was made from Mrs. Jarvis of Montreal, a daughter of the late Professor H. H. Croft, and according to an inscription on the tray it was "Presented to Professor Henry H. Croft, D.C.L., Captain of the University Rifle Corps, by the members of the Company, Toronto, February 21, 1863." It is appropriate that this silver should find a permanent home in the Croft Chapter House.

The superintendent and architects are hard at work on the plans for the new women's residences which, it is hoped, will be ready for occupation at the beginning of the session 1930-1931.

(2) REPORT OF THE DEAN OF THE FACULTY OF MEDICINE

(*Dr. A. Primrose*)

There have been several changes to record in the personnel of the teaching staff of the Faculty of Medicine since the last annual report of the Dean.

The death of Dr. C. L. Starr, professor of surgery, came with startling suddenness from angina pectoris on December 25th, 1928. He was a distinguished graduate of the University of Toronto and a member of the teaching staff for 30 years. He was a brilliant teacher, an organiser and administrator of rare ability, and a master surgeon. In 1921, he became the first full-time professor of surgery and, at the same time, was appointed surgeon-in-chief of the Toronto General Hospital, having previously been senior surgeon in the Hospital for Sick Children. The admirable organisation of his department received recognition from many quarters. In 1926, on invitation from Harvard University, he occupied the chair of surgery in that institution for a few weeks: he had promised to hold a similar position in St. Bartholomew's Hospital, London, but death intervened. He was a most popular colleague, beloved and respected by all his associates. The university, the faculty, and the students have suffered a severe loss in being deprived of his counsel and service which he rendered so ably and with such unstinted devotion.

The department of surgery lost one of its more junior members in the death from pneumonia of Dr. Oliver R. Mabee, which occurred on January 13th, 1929. He was demonstrator in surgery and clinical surgery. Previous to his appointment in surgery he had charge of the work in surgical pathology. His intimate knowledge of that subject enabled him to render very special service of high value as a teacher of clinical surgery. He was a most popular colleague, a loyal and true friend to all his associates.

Dr. Andrew Hunter has resigned as professor of biochemistry and has been appointed to the chair of physiological chemistry in the University of Glasgow. He is a distinguished graduate of the University of Edinburgh and came to us in 1915 as professor of pathological chemistry: since 1919 he has been head of the department of biochemistry. He achieved a high reputation as a teacher and for his numerous contributions to scientific knowledge in the field of research. Students and colleagues alike will long continue to miss his ministrations among us. Dr. H. Wasteneys, who has held professorial rank in biochemistry since 1925 has been appointed head of the department in succession to Dr. Hunter.

Dr. William Goldie, who has been a member of the teaching staff in medicine for thirty-two years, has resigned his position as associate professor of medicine. During this long period of service he has been associated with the clinic in the Hospital for Sick Children and, in recent years, with that of the Toronto General Hospital. For the past ten years, in the latter institution, he has been physician-in-charge of one of the services in medicine. In the retirement of Dr. Goldie, the department of medicine loses an able and stimulating teacher and the faculty a valued member of its council.

Dr. D. N. Maclennan, who was appointed assistant professor in the department of ophthalmology in 1922, has resigned. He rendered efficient service not only since his appointment to professorial rank but for many years in a more junior capacity prior to that date.

We have to record the death of Dr. Charles Sheard, at the age of 73, on February 8th, 1929. He will be remembered by his old students as professor of physiology in the Trinity Medical School. After amalgamation of the staff of Trinity with that of the University Medical Faculty in 1903, Dr. Sheard was appointed professor of preventive medicine. He resigned that position in 1911.

Dr. C. H. Best, M.A., M.B. Tor., D.Sc. Lond., has been appointed professor of physiology in succession to Professor J. J. R. Macleod, whose resignation was recorded a year ago. Dr. Best was a co-worker with Dr. Banting in the discovery of insulin and was a research associate in the Banting and Best Chair of Medical Research. In addition he was assistant professor of physiological hygiene in this University and assistant director of the Connaught Laboratories.

The chair in surgery has been filled by the appointment of W. E. Gallie, M.D. Tor., F.R.C.S. Eng., in succession to the late Dr. C. L. Starr. Professor Gallie graduated in medicine from the University of Toronto in 1903. In 1924, he was appointed Hunterian professor in the Royal College of Surgeons of England, where he delivered a course of lectures. He now becomes surgeon-in-chief in the Toronto General Hospital, having previously occupied a similar position in the Hospital for Sick Children.

On April 5th, 1929, Dr. Donald C. Balfour of Rochester, Minnesota, delivered the third Balfour lecture in Convocation Hall, to a large audience of students and practitioners. Lister Day was celebrated and a luncheon at the York Club was attended by the Premier of the Province and by lay and professional representatives of the University and the hospitals all of whom were interested in the advance of medical science.

Professor Klotz returned from a second visit to West Africa in December 1928 (his first visit was in 1926). In June, he proceeded to Nigeria where he was associated with the Yellow Fever Commission, under the Rockefeller Foundation. Many important researches were completed. He was unfortunate in contracting malaria from which he happily made a good recovery. In July, 1928, Drs. Duncan Graham, G. E. Richards and H. W. Wookey represented the University in an important International Conference on Cancer held in London, England. In May, 1929, Dr. W. W. Jones was elected President of the Academy of Medicine, Toronto. In October, 1928, the Dean received the honorary degree of Doctor of Laws from Dalhousie University, Halifax, Nova Scotia.

In the last annual report it was stated that a large laboratory building was to be erected on the north side of College Street, connected by a tunnel with the Toronto General Hospital on the other side of the street. The laboratories will house the clinical departments, the department of pathology and bacteriology and the Banting and Best department of medical research. The building is now in process of construction and will be occupied sometime during the coming session.

It is of interest to note that, under the aegis of the Canadian Medica Association, the Royal College of Surgeons of England have made final arrangements to conduct the primary examination for the fellowship of the College, in the University of Toronto in August, 1929. Thirty candidates have entered for this examination: they come from various universities of Canada, with the exception of three who are from the United States of America.

(3) REPORT OF THE DEAN OF THE FACULTY OF APPLIED SCIENCE AND ENGINEERING

(*C. H. Mitchell, C.B., C.M.G., C.E.*)

The Faculty of Applied Science and Engineering has experienced another year of gratifying success in its academic progress. The session just closed has been marked by diligent and attentive work on the part of the students and by painstaking and efficient work by the staff.

The results of the annual examinations recently held indicate a high standard of attainment in all of the departments comprising this faculty. For some years past, an effort has been made to increase the standards throughout all years and departments and the advantage of this policy is now becoming marked in various ways. It is the belief that the high standard is the most desirable aim for which to strive, and is worth more in the educational structure and academic progress of the university than numbers of students. Indeed, this faculty is experiencing the advantage of high standards in attracting greater numbers into the higher years from diverse sources. It appears now to have gained a distinction by which it seems to attract rather than deter prospective students, especially those of the more industrious type. This is a mark of progress.

Notwithstanding this rising standard, there has been a marked increase in the student attendance the past three years. In fact, the total number is approaching that of the high periods of the past. In three years' time, the attendance has increased from 445 to 600, at rates between 9% and 13% per year. There are already indications that next year will see an increase in even greater proportion.

These increases in a faculty of this nature are the reflection of the prosperous conditions in the country, and represent the swing of activities in all those forms of development which are now so evident. There is every reason to expect that these activities will continue for the next few years at least, and for that reason alone the university must be prepared to accept and train a greatly increased number of the young men who are to take their places in this national development.

Not only must the university be prepared to accept those students offering under these rapidly changing conditions, providing they are suitably prepared, but it has a further duty in attracting an increasing number of them in order to anticipate the country's requirements in the next few years. Signs are on every hand that there will be a dearth in Canada of young men trained in applied science and engineering unless the supply is considerably increased. This university has the past few years been sending out a graduating class of about a hundred; double this number will be wanted in the next few years.

No longer are we confronted with the problem of our young graduates leaving the country to seek employment elsewhere. That time has passed. The members of the graduating class which has just left were absorbed in Canada in an astonishing manner and it is a fair statement that, on an average, all had two or more positions offered them, awaiting graduation. It is significant that only two per cent. left the country. It is also significant that the remuneration paid, so far as can be learned, averaged about twenty-five to thirty per cent. more on graduation than three or four years ago. These facts also reflect the activity and prosperity in the country in a tangible manner.

These conditions, too, have their influence carried back into the operation of this faculty, for we are still finding ourselves very much handicapped in some quarters for lack of accommodation. This is especially so in the departments of chemical engineering and mining engineering, both of which have been markedly increasing in attendance. The crowding of students into these departments, which are situated in the Mining and Mill buildings, has been so great as to threaten their teaching efficiency on account of limited accommodation. Both of these branches of engineering are attracting many students, and the demand by the country for chemical and mining engineers has been increasing very rapidly, and will continue to increase under the prospects now ahead of us.

During the past year, we have managed the large number of students in the limited accommodation of chemical and mining engineering only with difficulty, and the situation with which we are confronted for next session promises to be acute. In April last, when this became evident, the faculty urged provisions to meet this next year. The relief which has been provided for chemical engineering for next session by making available for it an additional laboratory is much appreciated, especially as it was made possible through the co-operation of members of departments in the Faculty of Arts. Further relief is being similarly provided by placing at our disposal a large lecture room in the biological building. With respect to the relief for crowding in mining engineering, it is again strongly urged that increased accommodation be provided. It is the hope, and it is recommended strongly, that a very substantial addition be made to the Mill building during the coming year, so that it can be available for use at the commencement of the session 1930-31; in this hope, it is proposed to manage with the present quarters for the ensuing year. Only in this way can we keep pace in efficiency in instruction in this important department.

The past session was marked by two important extensions inaugurated in the courses given in this faculty. In the department of architecture the length of the course has been extended to five years. The period of four years was found to be quite inadequate to cover all the instruction and training now demanded for the architectural profession, and it has recently become evident that this university must meet this situation imposed by new conditions. The newly constituted course embraces not only considerable curriculum work, but provides for obligatory periods, aggregating twelve months, to be spent in architectural offices during vacations. This course went into effect the past session.

A new course in aeronautical engineering has been inaugurated in connection with the department of mechanical engineering, comprised especially in the third and fourth years. It is not the desire of this university to unduly specialise in applied science courses, but it has been felt that as the art and practice of aeronautics has now advanced to such a stage and aviation is rapidly becoming so much a part of the life of the country, it is the duty of the university to anticipate the needs in this direction. It is the intention to accept only a limited number of students in this course, not only because a very high academic attainment is necessary, but because the accommodation in the aerodynamics laboratory is limited. This first year's operation of the course has been attended with good success.

The department of mechanical engineering will be much strengthened by the visit of Professor Angus, made to Great Britain and Europe, during this session on a year's leave of absence, whereby he is able to bring back for the benefit of the university much valuable information as to educational methods and the latest practice in applied science.

It is a pleasure to record that four additional scholarships and prizes have been established in the department of architecture. These are: The Ontario Association of Architects Scholarship, for the second year; the Mathers and Haldenby Prize, and the Toronto Brick Company's Prizes, for the third year; and the Darling and Pearson Prize for the fifth year. It is gratifying, also, to announce that Messrs. Jenkins Brothers have continued their scholarship in the third year in engineering for a further period of five years.

Research in this faculty, under its School of Engineering Research, has progressed most favourably during the session. The character and extent of these researches are described more in detail in a separate report already made. These comprise a total of twenty-five researches carried out by twenty-eight members of the staff and research assistants. They include various researches in different phases of civil engineering, structural engineering, mining, and mechanical engineering, including aeronautical, chemical, electrical, and metallurgical engineering.

It is with profound regret that the death is recorded of Professor Peter Gillespie, in May of this year. His untimely loss will be very greatly felt, and his place cannot well be filled, as he was a unique teacher, an eminent civil engineer of wide knowledge, and a man of charming personality. His death is mourned by university colleagues and graduates alike.

(4) REPORT OF THE DEAN OF THE ONTARIO COLLEGE OF EDUCATION

(*Dr. Wm. Pakenham*)

No change in the teaching personnel of Ontario during the last decade has been more marked than the rise in scholarship. Third-class teachers are gone, first-class candidates are almost as numerous as second-class candidates in the training schools, and college graduates in training for High School teaching certificates are four times as numerous as they were in 1920.

The increase in the number of college graduates in training as teachers—a corollary of the expansion in Ontario Secondary Schools, especially Vocational Schools—has resulted in a demand for specialisation in teaching. The College of Education will offer next session courses for supplementary teaching certificates in vocal music, art, physical education, and commercial subjects. This specialisation in conjunction with the increase in attendance will create a very urgent demand for additional equipment and accommodation in the College of Education.

(5) REPORT OF THE FACULTY OF HOUSEHOLD SCIENCE

(*Dr. C. C. Benson, Secretary*)

I beg to submit the following report from the Faculty of Household Science for the session of 1928-1929:—

The registration in the faculty has shown a considerable increase over that of last session, the total number enrolled being 167, as compared to 131 for last year.

The registration is distributed as follows:—

	Honour	Pass	Total
First year	11	44	55
Second year	7	35	42
Third year	5	33	38
Fourth year	4	26	30
Occasional students	..	...	2
Total	27	138	167

It is, thus, apparent that the increase in numbers is shown in the past course. In this course, the admissions show that most of our students are coming from Toronto, with a small number coming from other parts of the Province, and that a few also are coming from other universities and colleges to enter our higher years. The course is, in fact, giving opportunity for the study of household science by students of other educational institutions which have not departments of such work. Of the students admitted this year, two have come from the University of British Columbia, two from Queen's, one from Macdonald College, Quebec, and four from Macdonald Institute, Guelph. We have also had one student from McGill, who graduated with our pass B.H.Sc. degree this year, and other students from Macdonald Institute who had entered last session.

We also admitted students to our second year, three on certificates of honour matriculation and a similar number who had completed one year of work in the Faculty of Arts. We believe that our regulations for admission to advanced standing are now working satisfactorily. In general the students coming from other universities or colleges are now coming with the proper preparation and those who have lately entered our third and fourth years under the regulations which have been made, have been doing satisfactory work and compare very well with students who have been spending the full four years here.

We also admitted some students last autumn with technical school preparation, which did not quite complete the requirements we have laid down. This was done, because it was felt that opportunity should be given students from the technical school to take advanced work in household science. These students have not, however, been able to come up to the standard set for the work here, so that more complete preparation should be given such students before they are admitted to this faculty.

With the considerable increase of registration there has been a corresponding increase of clerical and administrative work, and I have been very grateful for the extra clerical assistance granted last year by the Board. Miss Ruth M. Briggs, B.A., has been with us all year and has been of great assistance. She will be here to carry on work during the summer also, and so be able to answer enquiries as they come in.

The work of the faculty is proceeding satisfactorily.

(6) REPORT OF THE DEAN OF THE FACULTY OF FORESTRY

(*Dr. C. D. Howe*)

The increased interest on the part of the public in forestry matters reflects itself in the number of students registered in the faculty of forestry. During the last year we had the largest number (sixty-six) since the faculty was established. The number of entrants for the past two years has been around twenty-five. If this number maintains itself for the next two years, the council of the faculty may have to consider methods of restricting the registration lest the supply of trained foresters exceed the demand. Partly to avoid this possibility but more particularly for sound pedagogical reasons the Council has again raised the entrance requirements to become effective at the beginning of the university year 1930-31. If, however, the two acts passed by the last Provincial Legislature, the Provincial Forests Act and the Pulpwood Conservation Act, become fully operative there should result increased opportunities for actual forestry work in the province, but under the circumstances as they exist in relation to the administration of the Crown forest lands, it will take some years to bring the purpose of the acts into full bearing.

During the winter, the members of the staff and the Forestry Branch gave a short course of lectures to the chief fire rangers and the deputy chief fire rangers of the Ontario Fire Protection Service. It is intended to continue such lectures next year and it is hoped that they will lead to the establishment of a forest ranger school at some point in the northern forests. This course of lectures and that given on wood structure and the identification of woods to a group of wholesale and retail lumber dealers in the city by Professor White last year, indicate that the faculty is maintaining its policy of public education in forestry matters.

Professor White has been made chairman of the forest research committee of the Forestry Advisory Board established by the Provincial Government several years ago and he will spend the summer in the study and organisation of the research problems in forestry. The Provincial Forests Act of the last Legislature created the Wanapitei Forest of four townships in the Sudbury district. This is set aside for forest investigative work and it will probably become the principal centre for such work in Northern Ontario.

Professor Dwight and Mr. Hosie will continue the research work in north country during the summer, the former upon the growth and yield of young pulpwood stands on the burned areas and the latter upon a basis of classification of forest types. Mr. Hosie received a master's degree this year on presentation of a thesis based on his summers' work. He made a very distinct contribution to our knowledge of forest types.

(7) REPORT OF THE DEAN OF THE FACULTY OF MUSIC

(*Dr. E. C. MacMillan*)

During the session 1928-1929, the number of students registered was 34. In the course leading to the degree of Bachelor of Music 16 registered in the first year, 7 in the second year and 9 in the third year. Two candidates were registered in the course leading to the degree of Doctor of Music.

The following lectures were given by members of the Faculty of Music:

ERNEST MACMILLAN, Esq., B.A., Mus. Doc.:
For first year students:—
January 7—
January 21— "Harmonisation of Melodies."
February 18—"Modulation."
March 8—"Counterpoint in fifth species."

H. A. FRICKER, Esq., M.A., Mus. Doc.:
For students of all years:—
January 11—} "Orchestration."
January 18—}
January 25—} "Mass in B minor," J. S. Bach.
February 1—}

F. A. MOURÉ, Esq., Mus. Doc.:
For students of all years:—
January 14—"One Hundred Years of Schubert."
January 28—"Primitive and Mediaeval Music."
February 11—"Some Historical Aspects of the 17th and 18th Centuries."
February 25—"Buononcini and other Contemporaries of Handel."

L. SMITH, Esq., Mus. Bac.:
For second year students:—The working of second year papers.
February 8—"The String Quartet."
February 15—"Melodies with Pianoforte Accompaniment."
February 22—"Exercises in Continuous Modulation."
March 1—"The Exposition of a Fugue."

A choral and orchestral programme was given on January 9th by the Conservatory Choir and Orchestra in Convocation Hall, the programme including the first two parts of Bach's "Christmas Oratorio." The fourth annual presentation of Bach's "St. Matthew Passion" under the auspices of the university was given on Tuesday of Holy Week; especial interest is attached to this event as marking the 200th anniversary of the first performance of this work. The audience was the largest that has ever been in attendance, and it was particularly encouraging to see the students' seats so well filled.

Dr. F. A. Mouré, university organist, attracted as usual, large audiences to his excellent series of fortnightly organ recitals which have become such a prominent feature in the musical life of the university.

Mr. J. Skillicorn, in his very pleasing recitals on the memorial carillon in Hart House tower, has added a new and delightful feature to our musical life.

The very successful series of students' recitals of chamber music given during the season 1927-28 was repeated on a more extensive scale this season, a large body of students attending on each occasion. In addition to the Hart House Quartet, these concerts included such visiting artists as Mr. Hans Kindler, Mme. Norah Drewett de Kresz, Mr. Leo Smith and the Flonzaley Quartet.

A demonstration of Dalcroze Eurythmics was given at Convocation Hall on March 21st, when Mr. Paul Boepple, of New York, aroused keen interest on the part of the large audience present.

Enthusiasm among the student body in connection with the Sunday evening and Friday afternoon concerts in Hart House has shown no signs of abating, nor has the programme ever been of a finer musical quality. The Songsters, conducted by Mr. J. Campbell McInness, have also proved highly popular, and are a valuable means of stimulating students to musical activity on their own account. Once again, we owe a great debt of gratitude to the musicians who have so kindly volunteered their services for these concerts.

It is highly desirable, however, that the various musical activities in the university should be more definitely focussed, and their direction placed in the hands of some suitable person, who would be in a position to give time and attention to this work, and who would, moreover, be expected to stimulate a desire for increased musical activity in the student body itself. Apart from the efforts of a small handful of students' clubs and societies, of which the Victoria College Glee Club, under the direction of Mr. T. J. Crawford, is worthy of especial mention, the attitude to music of the majority of students seems to be largely passive. It is greatly to be hoped that steps will be taken in the near future to remedy this state of things.

There has again been a considerable increase in the number of candidates in the local examinations of the Toronto Conservatory of Music, the enrolment of this season totalling 21,285 as compared with 19,707 for 1927-28. The entries for the year were distributed as follows: Piano, 12,752; Violin, 693; Singing, 514; Sight-Singing, 104; Organ, 34; Violoncello, 5; Theory (Rudiments, History, Harmony, Counterpoint, Form) 7,183.

(8) THE REPORT OF THE DEAN OF THE SCHOOL OF GRADUATE STUDIES

(*Professor J. Playfair McMurrich*)

During the session 1928-1929 the number of students registered in the School of Graduate Studies was 414, an increase of four over the preceding year. Of these 316 were residents of the Province of Ontario, 16 of British Columbia, 12 of Saskatchewan, 11 of Nova Scotia, 10 of Quebec, 8 of New Brunswick, 7 of Manitoba, 5 of Alberta, 1 of Prince Edward Island, 13 of the United States and 15 of Overseas Dominions and foreign countries. The attendance of 70 students from the Provinces of Canada other than Ontario is a matter for congratulation.

The degrees sought are shown in the following table:—

	Men	Women	Total
Candidates for the degree of Ph.D.	57	23	80
Candidates for the degree of M.A.	83	53	136
Candidates for the degree of Ch.M.	1	..	1
Candidates for the degree of M.A.Sc.	7	..	7
Candidates for the degree of M.Arch.	1	..	1
Candidates for the degree of C.E.	3	..	3
Candidates for the degree of Mech.E.	1	..	1
Candidates for the degree of E.E.	2	..	2
Candidates for the degree of D.Paed.	54	8	62
Candidates for the degree of M.S.A.	14	..	14

In addition 63 men and 44 women were registered as graduate students without being definitely candidates for a degree.

The distribution of the candidates for the degrees of M.A. and Ph.D. in the various departments, according to the subject chosen as the major study was as follows: biochemistry, 5; biology, 10; chemistry, 14; classics, 4; educational theory, 1; English, 13; epidemiology and biometrics, 1; food chemistry, 3; forestry, 1; geology, 10; German, 4; history, 10; household science, 6; hygiene and preventive medicine, 2; mathematics, 7; mineralogy, 2; pathology and bacteriology, 2; pathological chemistry, 3; pharmacology, 1; philosophy, 28; physics, 21; physiology, 7; physiological hygiene, 2; political science, 9; psychology, 9; romance languages, 14; semitics, 5; zymology, 4.

During the year 10 students fulfilled the requirements for the degree of Ph.D.; 74 those for the degree of M.A.; 1 those for the degree of Ch.M.; 4 those for the degree of M.A.Sc.; 3 those for the degree of D.Paed.; 2 those for the degree of M.S.A.

The candidates who received the degree of Ph.D., together with the titles of their theses, were:—

ELIZABETH COHEN,—The magnetic susceptibility of some metallic elements.

LORNA HELEN COTTON,—The general principles of group activity.

JAMES ARNOLD DAUPHINEE,—The quantitative determination of Arginine by the use of Arginase.

BEATRICE McELROY REID DEACON,—The effect of temperature on the stability of copper colloidal solutions.

VIOLET EVELYN DUNBAR,—The mechanism of the effect of acid or alkali on the peptic hydrolysis of proteins by pepsin or trypsis. The role of metaprotein in the hydrolysis of protein by pepsin. The stages in the hydrolysis of blood fibrin by pepsin, pancreatic extract, intestinal extract and trypsin-kinase.
CHARLES GORDAN FRASER,—The action of methylene-blue and certain other dyes on living and dead yeast. Methylene-blue as indicator in determining the toxicity of phenol and phenol-salt solutions toward yeast.
EARLE WILLARD MCHENRY,—Histamine.
IRENE MOUNCE,—The Biology of Fomes pinicola (SW) Cooke.
DONALD STRATHERN RAWSON,—The bottom fauna of Lake Simcoe and its role in the biology of the Lake.
SAMUEL SOSKIN,—Certain aspects of the physiology of carbohydrate Metabolism.

The open fellowships provided for students in the School of Graduate Studies for the session 1928-1929 have been renewed for the coming session by the generosity of the Canadian Pacific Railway, the Imperial Oil Company, Sir Edward Kemp, Colonel R. W. Leonard, the Robert Simpson Company and Colonel H. Cockshutt. The following have been appointed to these fellowships, the universities from which they graduated and the departments in which they will pursue their major studies being indicated:—

M. F. Boone, B.A., New Brunswick, department of classics.

Miss A. E. Riggs, B.A., British Columbia, department of pathology and bacteriology.

Miss M. I. Grant, B.A., British Columbia, department of English.

Miss E. T. Harman, B.A., Saskatchewan.

Miss E. G. Dyer, B.A., British Columbia, department of German.

G. S. DuVernet, B.A., King's College, department of romance languages.

Miss M. K. J. Tolmie, B.A., British Columbia, department of philosophy.

W. A. F. Hagborg, B.S.A., Manitoba, department of botany.

Appointments to other fellowships open to graduate students have been made as follows:—

The Alexander Mackenzie Fellowships:—Miss A. M. Muckle, B.A., Toronto, department of history; R. H. Fleming, B.Comm., Toronto, department of political science.

The Ellen Mickle Fellowship:—L. J. Harris, M.D.

The University of Toronto War Memorial Fellowship:—E. R. Buckler, B.A., Dalhousie.

The Education Fellowships:—No award.

The Ontario Government Fellowships:—F. J. Richardson, B.S.A.

(9) REPORT OF THE DEAN OF THE FACULTY OF DENTISTRY

(*Wallace Seccombe, D.D.S.*)

During the session 1928-29 the number of students registered in the Faculty of Dentistry was 231, and in addition 18 young women were enrolled in the dental nurses' course which is given in this faculty by arrangement with the Royal College of Dental Surgeons of Ontario. Seven graduate students were registered for study, of whom five successfully completed one year's work and were awarded the degree of Bachelor of Science in dentistry.

It is with sincere regret that we report the passing of Dr. Guy G. Hume who occupied the chair of orthodontia since 1906. In 1914, Professor Hume brought distinction to the University by being elected president of the American Society of Orthodontists, which honour was a fitting recognition of his outstanding ability and kindly personality. Doctor Hume had a notable war record, having been placed in command of the Canadian Army Dental Corps at Orpington, being subsequently promoted to the rank of Lieutenant-Colonel. The Honourable S. C. Newburn conveyed to the faculty his sympathy and regret upon the passing of Professor Hume in the following words: "His work was an inspiration to us all, and I think I can honestly say it was through his efforts that the dental organisation within the Canadian Corps was properly organised, and it grew to be one of the most outstanding services in the Corps. In the wonderful work he accomplished I formed the very highest admiration and esteem for him as a soldier and a gentleman."

The executive committee of the faculty council is composed of nine members elected annually by the council at the September meeting. The committee meets on Tuesdays at Hart House from 12:00 to 2:00, and a mimeographed copy of the minutes of each meeting is sent to all of the members of council. The decisions of the committee are subject to the approval of the council. Forty meetings were held during the session, the members showing keen interest in their work and attending with great regularity. This plan of faculty organisation has proven very satisfactory.

During the session fifty-three extramural lectures were given by members of the staff at various points throughout the Province of Ontario before dental and medical societies. The faculty extramural lectures fill a most important need in Ontario and are greatly appreciated by our graduates.

Arrangements were made for Dr. Mason to visit Western Canada during February and part of March, thirteen points being included in his itinerary. Two days were spent at each place giving clinics and talks on dental diagnosis, operative and children's dentistry before dental graduates. The Alumni office arranged for Professor Mason to address a number of the local Alumni Associations throughout the West. Numerous letters have been received expressing appreciation of Dr. Mason's visit.

The Annual Course for Dental Practitioners was held from December 17th to 22nd, 1928, when sixteen graduates were present. Plans are being made to hold five short courses for practitioners at intervals during the ensuing year, concentrating upon one subject for each course, thus permitting of clinics and demonstrations during the forenoons and affording the graduates opportunity for clinical practice in the afternoons.

More research work was undertaken during the past session than in any previous year in this faculty. A report upon the problems investigated appears elsewhere.

The Carnegie Foundation kindly appropriated $2,000 for the dental library in this university and the faculty executive has been giving careful consideration to our library problem with a view to the wisest expenditure of this sum. The council forwarded a resolution of thanks to the foundation for its generous gift.

The James Branston Willmott Scholarship of the value of $250 was established and awarded this year. The scholarship was divided equally between two first year students holding the highest standing in pass and honour matriculation in the subjects required for admission to dentistry. The conditions of this scholarship have been amended to provide for a first and second James Branston Willmott Scholarship, the first to be valued at $150, and the second at $100.

In addition to the regular council meetings five staff conferences were held during the session. These conferences were informal supper meetings from 6:00 to 8:00 p.m. when members of other faculties were invited to speak upon some subject connected with their work and of interest to our members. These conferences proved exceedingly helpful and provided an excellent opportunity for members of the faculty to get together in a friendly and informal way.

The increased appropriation that was made available for pathology through generous gifts of friends of Professor Graham, has resulted in notable development in this department during the past session. The department is now well equipped not only for undergraduate work but also for graduate study and research.

The photomicrographic outfit has not yet been installed but its delivery has been promised for an early date.

We regret to report the resignations of Drs. B. O. Fife, H. G. Robb, B. R. Gardiner, J. A. Bothwell and H. H. Cummer, all of whom are now devoting their entire time to private dental practice.

(10) REPORT OF THE DIRECTOR OF THE SCHOOL OF HYGIENE

(*J. G. FitzGerald, M.D., LL.D., Director*)

The School of Hygiene, as was pointed out in the first annual report of the director (June, 1928), consists of (1) the department of hygiene and preventive medicine (which is also a department in the faculty of medicine), (2) the department of epidemiology and biometrics, (3) the department of physiological hygiene and (4) the department of public health nursing. This latter for purposes of administration is not a part of the school of hygiene. In consequence, an account of the work of the department of public health nursing is not included in this report.

As heretofore, both graduate and undergraduate students have received instruction in public health and preventive medicine in the school of hygiene. As will be seen by references to the statistical data, the registration of graduates in medicine in the course leading to the diploma in public health is the largest ever recorded in this university. These students came from China and the provinces of British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec and Nova Scotia. The number of students registered in the school of graduate studies from the departments of the school of hygiene was also large. As a result, the facilities of the new school of hygiene building were taxed to the utmost.

The total number of undergraduate students from other faculties and departments of the university has been greater than in any previous year. One exception must be noted. No students from the faculty of applied science and engineering, electing the municipal engineering option, were registered in the school during this session.

The present year has been one of much activity in research and investigation. The resources of the school, both in personnel and funds, are pooled with those of the Connaught Laboratories so that co-ordinated research may be vigorously and energetically prosecuted in the field of preventive medicine. Further reference to these activities will be found in the report of the Connaught Laboratories.

During the year Dr. C. H. Best was appointed professor of physiology and consequently was obliged to resign his assistant professorship in physiological hygiene. Dr. Best has, however, been appointed acting head of the department of physiological hygiene and will continue to guide and direct research and teaching in the department.

The work in the department of epidemiology and biometrics under Dr. R. D. Defries has expanded greatly during the year and the space available for this new department has also been overcrowded.

During the year, the school has been visited by members of universities in Australia, India, the British Isles, South America, Holland, Italy, Sweden, and other European countries.

Registration in the school of hygiene for the past two years was as follows:—

		1927-28	1928-29
A.	Graduates—		
	Candidates for Diploma in Public Health	7	11
	Candidates for the degree of M.A	2	2
	Candidates for the degree of Ph.D	3	4
	Occasional students	3	1
B.	Candidates for the Diploma in Public Health Nursing	53	34
C.	Undergraduates—		
	Faculty of Medicine, 5th year	109	112
	Faculty of Applied Science, 4th year	5	..
	Faculty of Household Science, 3rd year	63	65
	Department of Social Service	28	36
	Department of University Extension (Occupational Therapy and Course for Administrators and Instructors in Schools of Nursing)	58	82

(11) REPORT OF THE LIBRARIAN

(*W. S. Wallace, Esq., M.A.*)

I beg to submit the following report on the work of the university library for the year ending June 30, 1929:

The number of volumes added to the library during the year has been 10,966, and the number of pamphlets 2,935. The total number of bound volumes in the library is now 241,429, and the total number of pamphlets 86,576.

The statistics of the use of the library by undergraduates, in comparison with previous years, are as follows:—

	1921-22	1923-24	1926-27	1927-28	1928-29
Day books	41,928	80,172	106,485	117,316	117,267
Night books	18,998	31,314	39,779	47,390	48,114
Week books	4,792	12,316	13,014	15,478	17,484
Totals	65,718	123,802	159,278	180,184	182,865

These figures do not take into account the large number of books taken for consultation from the reference shelves, of which over 17,000 were during the year replaced on the shelves by the library assistants.

There has been a growth also in the use of the library by graduates. There has been an increase of over twelve per cent. in the number of names in the graduates' register, and the total number of books borrowed by graduates and by professors during the past year has been 28,740, an increase of approximately seven per cent. over the previous year.

The growth of the library and of its use, which these figures illustrate, has brought with it pressing problems. Of these the chief at present is that of finding room for new accessions. The stack room is now so congested that it is becoming in certain sections impossible to put books away in their proper places. At the same time, the library has reached the limit both in regard to the space available for readers and for library workers. The library, in fact, has out-grown its building. Early in the past year this situation was brought by the library committee to the attention of the Board of Governors, and the Board appointed a sub-committee to enquire into the matter of enlarging the library building. At the request of this sub-committee the Superintendent of Buildings and Grounds has drawn up tentative plans, which if adopted would solve the problems of the library in regard to accommodation both of books, readers, and workers for many years to come. There, for the moment, the matter rests. But it may not be out of place for me to bring to your attention once more the necessity of affording the library some sort of relief at the earliest possible moment, since under present conditions it will become increasingly difficult for the library to render to the university an effective service.

It is not only, however, to its physical equipment that the library must make additions. It has out-grown the system of shelf-marking adopted thirty years ago, when the number of books in a given class was only a fraction of what it is to-day, and it has become necessary for us to add to the symbols already in use certain book numbers which will indicate the exact order which books must occupy on the shelves. For this purpose I have asked for a special appropriation from the Board, and with this I propose to engage the services of a special staff which, it is hoped, will be able to complete the work of re-classifying and re-shelf-marking within two or three years.

At the same time, I think that the moment has arrived when the Board should reconsider the salary scale of the regular assistants in the library. The scale now in force has proved inadequate not only for the purpose of attracting a sufficient number of first-class assistants, but also for the purpose of retaining the services of a number of assistants whom we have spent time in training. I have had to ask the Board of Governors to augment in several cases the salaries of such assistants in order to retain them; and this has placed other assistants, equally valuable, at a disadvantage in regard to their remuneration. In order to readjust this situation I propose to recommend to the Board of Governors an upward revision of the salary scale in the library, so that the beginning salary will be raised to a point which will attract the best type of library assistant, and so that the *maxima* for the different grades will compare less unfavourably with the salaries paid, for example, to public school teachers. In this connection, I feel that I must draw attention once more to the true academic character of much of the work done by the library staff. Assistants in the university library require, in addition to technical qualifications, a knowledge of languages and a general back-ground of education which are not requisite in purely clerical tasks, and it seems proper that this fact should be borne in mind when the question of the revision of the salary schedule in the library comes up for consideration.

(12) REPORT ON RESEARCH

Anatomy, under direction of Professor J. P. McMurrich

Professor McMurrich has carried on investigations of two problems:—

1. The phylogenetic and embryological development of the digastric muscle.
2. The development of the human bile ducts and liver tissue.

Professor Piersol has studied the effect of different methods of freezing on the structure of pork muscle.

Professor J. C. Watt has continued his studies of the deposition of calcium salts in various tissues.

1. By means of a special technique the calcium content of bone and cartilage has been made visible by precipitation and the relative amount of the salts and their remarkable concentration at the advancing line of calcification of cartilage have been demonstrated.
2. In collaboration with Dr. R. K. George a start has been made on a study of the minute distribution of nerve fibres in bone.
3. In collaboration with Dr. H. W. Johnston a study is being made of the musculature of the female urethra in connection with a surgical operation devise to remedy a defect of that structure.

Professor E. A. Linell with the assistance of Dr. Mary I. Tom has investigated certain problems in the structure of the nervous system.

1. The experimental study on the reaction of neuroglia to aseptic and septic brain wounds.
2. The histogenesis of neuroglia.
3. The histology of the basal ganglia.
4. An experimental and clinical study of histological changes in cerebral oedema (with Dr. Erb and Professor Klotz).
5. The application of differentiating staining methods to cerebral gliomata (with Dr. K. G. McKenzie).
6. Histological changes in voluntary muscle following sympathetic ramusectomy (with Dr. R. I. Harris).

Professor H. A. Cates has (1) continued his observations on the relative rates of growth of the cranium and face commenced with the children of the St. Georges Nursery School. Arrangements have been made with the department of obstetrics to carry on these studies on the children born at the Burnside Lying-in Hospital and measurements of the students taking courses in anatomy have also been made.

2. He has also begun an investigation, with Dr. R. K. George, on the blood supply of the middle ear.
3. And has been engaged in the preparation of models to demonstrate the anatomy of the inguinal rings and the peritoneum, the latter with the assistance of Dr. R. K. George.

Dr. R. K. George has collaborated with Professor Watt and Professor Cates in certain of their researches. In addition he has made observations on—

1. The time of closure of the sagittal suture.
2. The relative frequencies of "hand types" in female students in attendance at the University, the material for which was collected by Dr. Edith Gordon. The study is now being extended to male students.

Dr. B. L. Guyatt (1) has continued his studies of the physiological significance of certain muscle tremors.

2. Has prepared a reconstruction model of the basal ganglia of the human brain.

Dr. D. A. Irwin has been investigating the innervation of the blood-vessels of muscles.

H. LeMasurier has made a reconstruction of the bronchial tree of a human embryo and has begun the reconstruction of a Brunner gland from the adult human duodenum.

Astronomy, under direction of Professor C. A. Chant

An investigation of the reflecting power of electrically deposited chromium has been made by Mrs. V. Krotkov, research assistant. This research was undertaken to obtain data desired in designing a spectrograph. The results show that the reflecting power is very high in the blue and violet part of the spectrum, and that mirrors made from chromium would be very suitable for reflecting telescopes of moderate size. The ageing of silver mirrors has also been investigated by Mrs. Krotkov. In addition Mrs. Krotkov devoted a portion of her time to bringing the card catalogue of radial velocities up to date. This work will be continued next year.

Plates taken in 1927 to test the clearness of the night sky in Toronto as compared with points outside the city have been measured, and show that at points a few miles north the star images are fully thirty per cent. brighter.

Mr. P. M. Millman, a fourth year undergraduate student, investigated by a photographic method the light from the eclipsed moon on November 27, 1928, and found that as the moon entered the umbral shadow the light was abnormally blue. A paper embodying the results appears in the Journal of the Royal Astronomical Society of Canada for May-June, 1929.

Banting Medical Research Department, under direction of Dr. F. G. Banting

Dr. G. C. Cameron has continued the work on silicosis. It has been found impossible to consistently induce the disease in experimental animals, but chemical and microscopic studies were conducted to test the efficacy of treatment designed to prevent retention by or promote elimination of silica dust from lung tissue. Practical measures have not been devised.

Dr. W. B. Brebner repeated his work of last year but was unable to substantiate it.

In July, 1928, Dr. A. W. Hendrick applied for facilities for testing the effect of colloidal metals in the treatment of mouse tumors. Dr. J. R. Ross of this department collaborated with Dr. Hendrick. The metallic preparations used were supplied by Prof. Burton of the department of physics. A large number of solutions were tried but the results were disappointing.

Dr. J. R. Ross has also assisted Prof. Haultain in testing the high speed centrifuge.

Dr. E. J. King, who has been on leave of absence during the year, worked for eight months at the Lister Institute, London. At present he is working under the direction of Prof. Willstater in Munich.

Dr. G. W. Ross, assisted by Miss Lang, has investigated further cases of rheumatoid arthritis and is endeavoring to produce the disease in experimental animals.

Mrs. Deacon has continued the studies on the effect of temperature on colloidal solutions under Prof. Burton in the department of physics.

Dr. W. D. Lloyd is continuing a study of the form and function of the auricular-ventricular bundle, and experimental heart block in rabbits. Further study is in progress on the degeneration occurring in the bundle in experimental Yellow Fever. His work is being carried out in the department of pathology with the co-operation of Prof. Klotz.

Miss M. Crawford has been trying to demonstrate the existence of an enzyme which affects the solubility of silica.

Miss Gairns and myself have been working on autolysis in the tissues and investigated some substances which alter the rate of autolysis.

Biochemistry, under direction of Professor A. Hunter

The research work of the department of biochemistry has been conducted in the main along the lines indicated in previous reports; but there have also been initiated one or two investigations of a nature not hitherto attempted.

Professor Hunter has made, partly in the department itself but partly at the Pacific Station of the Biological Board of Canada, an investigation of the distribution among fishes of (*a*) creatine and (*b*) arginase. In each case the results, which have already been published, presented some interesting and unexpected peculiarities.

Professor Hunter has also redetermined the specific rotatory power of dextro-arginine, and has shown it to have a distinctly higher value than that hitherto assigned to it.

Mr. Dauphinee has completed his study of the use of arginase in the determination of arginine. He has applied his method to (*a*) the determination of arginine in a series of proteins, and (*b*) the measurement of the speed and extent of the liberation of arginine in tryptic digestion. The results in the latter case have been of remarkable interest and have thrown a distinctly new light upon the constitution of the protein molecule.

Mr. Branion has commenced an investigation of the vitamin content of fish oils. Having surmounted the preliminary difficulties of this kind of work, and having established a standardised colony of rats, he has shown that the liver oil of the ling is a rich source of vitamin A. This may prove to be of considerable economic importance.

Dr. Borsook and Dr. Goulding, working in collaboration with the department of medicine, have studied urobilinogen excretion in cases of pernicious anaemia, malaria, polycythemia rubra and in normal individuals. It was found that in untreated cases of pernicious anaemia the urobilinogen excretion was many times the normal. Coincident with clinical improvement following treatment, the urobilinogen excretion diminished to a normal amount. In polycythemia the urobilinogen excretion was normal. It rose with clinical reduction of the polycythemia, falling to normal with its return. In malaria the rate of blood destruction was increased during pyrexia.

Dr. Goulding has made some preliminary observations comparing peptic digestion of protein in vitro with gastric digestion in vivo. His observations disclosed no essential differences between the two processes.

Dr. Borsook has extended his researches in peptic synthesis. He has investigated the causes for the decreased yields of protein synthesised from substrates which have been in prolonged contact with pepsin in acid solutions. This investigation is not yet complete.

Miss Violet Dunbar has studied the stages of the peptic digestion of fibrin. She finds the process is not essentially different from that of the peptic digestion of egg albumin. Miss Dunbar has also studied the digestion of proteins with purified trypsin. This investigation has not been completed.

Mr. H. Bruce Collier has investigated the influence of light on the action of the enzyme urease. He has confirmed the observations of Mr. MacFadyen in this laboratory that sunlight inhibits the action of this enzyme. He is attempting an identification of the wave lengths responsible for this effect.

The researches of Mr. Dauphinee and Mr. Branion were conducted under the direction of Professor Hunter; those of Dr. Borsook, Dr. Goulding, Mr. Collier and Miss Dunbar under the direction of Professor Wasteneys.

Biology, under direction of Professor B. A. Bensley

Invertebrate Zoology, Entomology: (1) Professor E. M. Walker, studies of the exoskeleton and musculature of the head and appendages in *Grylloblatta*. Supervision of Mr. F. P. Ide, studies on the mayflies of Ontario trout streams as part of general survey of insect life of these streams. (2) Miss N. H. Ford, studies on the heat relationships of *Grylloblatta*.

Marine Biology: Professor A. G. Huntsman; supervision of A. W. H. Needler, life history and statistical studies of the haddock; Miss V. M. Davidson, seasonal periodicity in diatoms; Miss A. Berkeley, sexual changes and development in *Pandalus;* Dr. R. H. McGonigle, distribution of *Teredo* and *Limnoria* in relation to physical factors; W. S. Hall, biological and physical conditions in stagnant ponds; Miss A. Alley, studies of the crabs of the Atlantic coast; Mr. D. S. Rawson, hydrobiology and hydrography of the lakes of Prince Albert National Park.

Embryology: Professor A. F. Coventry, development of coiling in alimentary canal of mammals. Supervision of Miss K. K. Holman, preliminary studies on same problem in vertebrates.

Genetics: Professor J. W. MacArthur; studies on the inheritance of characters in the tomato and in the domestic fowl; studies on the origin, controlled production and cytological relations of chromosome mutants in the tomato; a spontaneous tomato chimaera (published); linkage studies in the tomato. Three linkage groups (published); studies on the effects of X-rays in producing changes in type of tomato, spinach and domestic fowl; collection of family histories of inherited characters in man.

Vertebrate Anatomy: Professor W. H. T. Baillie, studies on the jaw muscles of mammals; pigment distribution in the eye of mammals and reptiles; attachments of the eye muscles in fishes and primates.

Experimental Biology: Professor J. W. MacArthur and Professor W. H. T. Baillie, studies on metabolic activity and duration of life in *Daphnia magna;* metabolic rates and their relation to longevity (published).

Ichthyology: Professor J. R. Dymond, studies on the taxonomy, distribution and life histories of British Columbia trout; taxonomy and distribution of the ciscoes of Canada; distribution of marine fishes of the Pacific coast of Canada; supervision of A. L. Pritchard, studies on ciscoes of Lake Ontario and life-history of the alewife; C. McC. Mottley, life-history of the Kamloops trout.

Comparative Neurology: Professor E. H. Craigie, preliminary studies on relative vascularity of brain in inbred and normal standard white rats; microscopic studies on the brain of *Apteryx*, including first demonstration of occurrence of multilaminar cortex in non-mammalian animals; supervision of Mr. C. G. Smith, studies of the volume of the cortex in white rates and methods applicable thereto.

Economic Fisheries Research: Professor W. J. K. Harkness, survey of provincial fisheries problems and plan of organisation; supervision of J. L. Hart, studies on life-history of whitefish; in co-operation with Professor Dymond, of A. L. Pritchard, ecological studies on ciscoes of Lake Ontario; D. S. Rawson, studies on the bottom organisms of Lake Simcoe; in co-operation with Professor Walker, Mr. F. P. Ide, studies on the invertebrates of selected trout waters; W. E. Ricker, ecological relations of trout; G. W. Miller, mortality of alewives in Lake Ontario; Mr. H. Dignan and Mr. J. Oughton, survey of the fishes of the Bay of Quinte; A. Tester, preliminary studies on the spawning habits and life-history of the black bass in Georgian Bay. Six reports, comprising "Publications of the Ontario Fisheries Research Laboratory", XXXI-XXXVI, were issued during the year, and the laboratory co-operated with Dr. C. Hubbs, University of Michigan in the preparation of a study of the fishes of southern Ontario. Four reports are in process of preparation.

Royal Ontario Museum of Zoology: L. L. Snyder and J. L. Baillie, distributional studies of Ontario birds and mammals (13 reports and notices); E. B. Logier, amphibians and reptiles of British Columbia; T. B. Kurata, the scorpion in British Columbia.

Botany, under direction of Professor R. B. Thomson

I. Phanerogamic Botany, Genetics and Plant Breeding.
Under the direction of Professor R. B. Thomson.

A. Anatomy and Experimental Morphology.

Allin, A. E.—Tangential pitting in the wood of fossil and living vascular plants.
Astrom, Miss I. E.—Sporeling and adult structure of *Selaginella.*
Dickson, G. H.—Phases of sterility in the apple.
Hart, N. C.—The origin of resin canals in the wood of the pines.
LaRush, Mrs. F.—Studies on pollen grains in connection with hay fever.
Reed, Miss E. R. L.—The anatomy of the seedling of araucarians.

Simpson, Mrs. J. L. S.—The floral morphology of the cucumber. A new lactic acid method has been devised that will accelerate studies of this character.

Taylor, T. M. C.—Dormant roots and shoots in *Equisetum*.

Thomson, R. B. and Allin, A. E.—Devonian plants from Gaspé peninsula.

Thomson, R. B., Sifton, H. B. and Bannan, M. W.—Wound reactions of *Sequoia*, *Abies*, *Larix* and *Pinus*. The determination of the season of maximum response to wounding. The stimulation of resin production by chemical means.

Wright, Miss J. G.—(1) A continuation of the work in the pit-closing membrane in the higher gymnosperms. (2) A study of the life-history of one of the cycads of Western Australia.

B. Taxonomy.

Allin, A. E.—Collection from the Georgian Bay region.

Krotkov, P.—A revision of the herbarium material.

Taylor, T. M. C.—Collection in Western Canada.

Watson, W. R.—Collection and identification of Ontario flora (Temagami, Bruce Peninsula, Algonquin Park and local).

C. Genetics and Plant Breeding.

Strong, W. J.—Genetical studies of the cucumber. The experimental work is completed and a paper being prepared for publication.

Taylor, T. M. C.—Genetical and cytological studies of *Linaria*.

II. Cryptogamic Botany, Mycology and Forest Pathology.

Under the direction of Professor H. S. Jackson.

Lehmann, A. J. V.—A study of the nuclear phenomena of the germination of certain species of *Lepto-Puccinia* and *Uromyces*.

Hunter, Miss L. M.—(1) Life-history studies on species of *Melampsora* and *Melampsoridium*. (2) Comparative studies of the pycnia of rusts.

Jackson, H. S.—(1) A study of the rusts of South America based on the Holway collections. This is a taxonomic study dealing with a large collection of rusts made by the late Professor E. W. D. Holway, of the University of Minnesota, in South America. Publication is in the form of a series of papers in Mycologia. Two numbers have already been printed and a third is in preparation. (See Mycologia 18, 141-162, 1926; 19, 51-65, 1927). (2) A study of the rusts of Panama and Costa Rica. (3) Studies in the cytology of short cycled rusts. (4) The mycological flora of Ontario.

Jackson, H. S. and Thompson, G. E.—Studies of certain forest tree rusts.

Thompson, G. E. (under joint supervision of Professors Jackson and Bailey)—The Phacidium blight of spruce, white cedar and balsam.

III. Plant Pathology.

Under the direction of Professor D. L. Bailey and in conjunction with the Vineland Experiment Station of the Ontario Department of Agriculture.

Bailey, D. L.—Continuation of the investigations on dead arm of the grape in the Niagara peninsula, especially directed towards measures of control.

Koch, L. W. (Holder of Bursary from National Research Council)—Studies on the causation of raspberry spur blight and an intensive study of the causal organism *Didymella applanata*.

Montserin, B. G. (in co-operation with W. A. Ross, Dominion Entomologist Vineland Station)—Factors influencing the development of the perfect stage of the apple scab fungus.

Russell, R. C. (Holder of Eaton Research Scholarship)—A study of the normal development of wheat seedlings, contrasted with the development of seedlings infected with the take-all fungus of cereals.

Willison, R. S.—Studies on the conditions influencing wound gum formation and fungus infection in peach and grape.

IV. Plant Ecology and Seed Studies,
Under the direction of Professor H. B. Sifton.

Hamly, D. H.—The impermeability of legume seed coats—a microchemical and physiological study.

Foulds, F. E. (Holder of Eaton Research Scholarship)—The effect of pre-soaking on the germination of beans.

Pritchard, A. L.—Ecological studies of the plants in some Ontario lakes.

V. Plant Physiology,
Under the direction of Professor G. H. Duff.

Duff, G. H.—(1) Methods of characterising the "metabolic age" of leaves. (2) The mechanism of chlorophyll regeneration. This has particular reference to certain cases of chlorophyll deficiency.

Forward, Miss D. F. (under joint supervision of Professors Duff and Bailey)—The relation of nutrition and metabolism in wheat to its standard reaction to stem rust.

Krotkov, G.—Carbohydrate assimilation and metabolism, studied by means of corn plants grown in the dark with glucose as the sole source of carbon.

Millsap, Miss J. E.—The course of respiratory metabolism in *Phaseolus vulgaris*. Determinations at 20° C. of the initial rate of respiration and the course of the respiration rate under prolonged starvation conditions have been made and embodied in a thesis presented for the degree of M.A.

Racicot, H. N.—Growth correlations in *Phaseolus vulgaris*. An analysis of several years' experimental results is in its final stages.

Smith, P. W. P.—A study of the formation of nodules on peas.

Chemistry, under direction of Professor W. Lash Miller

Twenty-three students were engaged in research last winter under the direction of professors of this department.

The degree of Doctor of Philosophy was awarded to Mr. C. G. Fraser (Methylene-blue as indicator in determining the toxicity of phenol-salt solutions towards yeast, Prof. W. Lash Miller), and to Mr. E. W. McHenry whose work was carried out under the direction of Prof. C. H. Best. The degree of Master of Arts was conferred on Miss Mary Holt and on Mr. E. E. Lent; and the degree of Master of Science in Agriculture on Mr. G. W. Ruhnke, whose research was carried out in Guelph under the direction of Prof. R. Harcourt.

The following were the subjects of research:—

H. M. Barrett:—Absorption of moisture by fine powders.
W. G. Beare:—Partial pressures of aqueous acstone solutions.
W. A. Black, B.Sc.:—Gaseous conduction in electric furnaces.
A. Charles, M.A.:—Interconversion of the insomers of di-tolyl-ethylene.
C. J. Colombo:—The pH of nickel plating baths, under working conditions.
C. W. Delorey, B.A.:—Thermionic oscillator for conductivity measurements.
Miss E. V. Eastcott, Ph.D.:—Preparation of a volatile derivative of Bios II.
Prof. J. B. Ferguson:—Electrochemical behaviour of silicate glasses.
Prof. W. S. Funnell:—Partial pressures of aqueous solutions of methyl alcohol.

Prof. A. R. Gordon:—Numerical evaluation of certain infinite series.
H. C. Graham:—Attempts to synthesise Bios II.
Miss M. Holt, B.A.:—Production and chemical analysis of tubular forms of yeast.
Prof. F. B. Kenrick:—Supersaturation of liquid honey.
E. E. Lent, B.A.:—Photoexpansion and light-absorption of chlorine and bromine.
J. A. Maconochie:—Sporulation of yeast.
F. A. McVicar:—Partial pressures of aqueous solutions of acetone.
R. J. Mainland:—Conductivity of glass powders.
A. J. Mueller:—Equilibrium in the system, water methyl-alcohol butyl-alcohol.
F. R. Reevely:—Separation of the amino-acids from casein.
E. W. Skelton:—The pH of nickel baths at 25°.
Miss A. G. Slocomb, M.A.:—Saponification of esters in alcoholic solution.
Miss H. Stantial, M.A.:—Production of sporulation in yeast by chemical means.
D. F. Stedman, Ph.D.:—Conditions under which an arc strikes between carbon electrodes.
F. A. Todds:—Supersaturation of gases in suspensions of yeast, blood, and proteins.
A. S. Townshend, M.A.:—Reaction of the solvent alcohol on dissolved esters.
H. W. Watson:—Rapid estimation of sulphate in chromium plating baths.
C. V. F. Weir:—Thermionic generator for electrolysis with alternating currents.

Food Chemistry, under direction of Professor C. C. Benson

The research work carried on in this department during the session of 1928-1929 has been a continuation of that already undertaken.

The studies of vitamin B have followed two lines:—(1) investigations of the use of various solvents and of the use of phosphotungstic acid, as agents for purification of the active substance, and (2) studies of the mineral constituents of the food substances used by the test animals. These studies will be continued next session.

Investigations in connection with the nature of the pectin bodies of our fruits and fruit jellies, have also been started and will be further studied.

Geology, under direction of Professor W. A. Parks

1. Professor A. P. Coleman (professor emeritus) carried on investigations in glacial geology at Owen Sound, Collingwood, Meaford, and Wiarton; he also engaged in the re-examination of the Sudbury nickel eruptive.

2. Professor Parks spent part of the summer investigating the palaeozoics of Manitoulin island. Professor Moore was engaged in an examination of the ore deposits near the north shore of Lake Huron, and, together with Professors Coleman and Walker, in the re-examination of the Sudbury nickel eruptive.

During the winter the following investigations were under way in the laboratories.

3. *By Professor W. A. Parks*
    (*a*) Examination of fossils collected on Manitoulin island.
    (*b*) Examination of mammals from Wyoming and Nebraska.

4. *Under direction of Professor W. A. Parks*
    (*a*) Helgi Johnson—The fossils and stratigraphy of the Cataract-Medina series.
    (*b*) H. C. Laird—The cherts of the Lockport formation at Hamilton (assisted by grant from National Research Council).

5. *By Professor E. S. Moore*
    - (*a*) Investigation of the Sudbury eruptive.
    - (*b*) Report on ore deposits of north shore of Lake Huron.

6. *Under direction of Professor E. S. Moore*
    - (*a*) Duncan R. Derry—Laboratory work on ores from north shore of Lake Huron.
    - (*b*) A. M. Bell—Relation of silver deposits to the diabases of Ontario.
    - (*c*) J. E. Thomson—Origin of the Atikokan iron ores.

7. *Under direction of Professor A. MacLean*
    - (*a*) L. V. Bell—Boston Creek and other gold areas of Northern Ontario.

Household Science, under direction of Professor A. L. Laird

During the session 1928-1929 there were six graduate students in the department of household science, and three of these received the M.A. degree.

Miss C. Eipe, a graduate (B.A.) of the University of Madras, India, has worked on adequate and suitable Indian diets. The plan followed was to supplement the ordinary Indian diet in such a way that it would, as far as possible, measure up to present dietary standards, and at the same time to keep the cost within the very limited amount allowed for food in the student residences in Madras.

Miss G. R. F. Rose has investigated some points in connection with the shrinkage of various types of fabrics when subjected to treatment similar to that used in dress-making and laundering.

Miss M. M. Shaw has worked on food budgets and dietaries for families whose annual income ranges from $1,000 to $2,000. The family chosen for this study was one of father, mother, and three dependent children.

Miss M. S. McCready is studying the problem of how small children respond to colour in food.

Mrs. C. D. Reid is working to find to what extent cereal products can be used in planning satisfactory human diets.

Miss M. D. Smith is investigating the iron and nitrogen content of beef teas depending on the method of preparation.

Department of Medicine, under direction of Professor Duncan Graham

The following problems are being investigated by the staff of the department:

1. A study on the excretion of pigment in diseases of the blood, liver and spleen. (Part of this investigation is being carried on in conjunction with the department of biochemistry.)

2. A study of the effects of various forms of treatment, medical and surgical, on diseases of the blood, liver and spleen.

3. The effect of liver treatment on the neurological changes present in Addison's "pernicious" anaemia.

4. The effect of diseases of metabolism on the heart and blood vessels. (The first report on the progress of cardiovascular changes in cases of diabetes mellitus successfully treated by diet or diet and insulin has been published.)

5. The late effects on the nervous system resulting from encephalitis lethargica.

6. The relationship of unbalanced diets and gastrointestinal disturbances to the development of chronic arthritis. (Part of this investigation is being carried on in conjunction with the department of radiology. A preliminary report on this work will be published shortly.)

7. A study of the effect of focal infection on the development and progress of disease in general.

8. A study of the early histological changes occurring in the bone marrow in anaemic states. (This investigation is being carried on in conjunction with the department of pathology.)

Mineralogy, under the direction of Professor T. L. Walker

During the summer vacation of 1928 Professor A. L. Parsons continued in Munich his studies of crystals by the use of X-rays, begun in Stockholm in 1927.

Professor Thomson's work on the genetic relationships of the minerals of the Silver-Cobalt veins has continued throughout the year, and is now almost ready for publication.

Mr. W. A. Jones has been engaged in field and laboratory study of the relationship of the igneous and metamorphic rocks at Killarney and also to the southeast of Sudbury. Mr. A. R. Graham has devoted most of his available time to an investigation of the association of diamonds with chromite.

Professor Walker (in co-operation with Professor A. P. Coleman and Professor E. S. Moore) has continued his study of the igneous rocks associated with the nickel and copper ores at Sudbury. This work has been completed and published as a University Study under the title "The Sudbury Nickel Intrusive".

Most of the investigations have been greatly assisted by the excellent chemical analyses obtained by Mr. M. C. Haller and Mr. A. R. Graham, research assistants in the department of mineralogy.

Department of Obstetrics and Gynaecology, under direction of Dr. W. B. Hendry

Research work in the toxaemias of pregnancy is being carried on by Dr. VanWyck in co-operation with the department of pathological chemistry. Further studies in puerperal infection are being made by Dr. Dafoe in co-operation with the Connaught Laboratories.

An anthropological survey of the obstetrical patients has been started by Dr. Goodwin in co-operation with the department of anatomy, and an anatomical investigation of the compressor urethrae is being carried out by Dr. Johnston in co-operation with the same department.

Department of Pathological Chemistry, under direction of Dr. V. J. Harding

The arrangement whereby this department carries out routine determinations of the basal metabolic rate for the department of surgery has been continued, and is of mutual benefit. A large mass of data has been collected showing the value, and the limitations, of machines for such work.

The department of obstetrics and gynaecology and this department have continued their co-operation in the study of toxemias of pregnancy. Further papers on this subject have appeared from the two departments.

Professor G. Hunter has continued his researches on cystine and glutathionoine with the help of Mr. C. C. Lucas (Fellow) and Mr. A. S. Cook (National Research Council Bursary).

Dr. F. H. Van Nostrand is continuing his research on various phases of carbohydrate metabolism.

Dr. Nicholson is working on the problem of chemical constitution and nephropathic action.

Department of Paediatrics, under direction of Dr. Alan Brown

The work of the sub-department of paediatrics for the past year has been as follows:

1. Two concluding studies were made in the research on the antirachitic effect of sunlight on rats, one on the seasonal variation of the antirachitic effect of sunlight and the other on the relation of the altitude of the sun to the antirachitic effect.

2. Some studies were made on blood fat and cholesterol in diabetes and nephritis and many blood sugar determinations in connection with the work of the diabetic clinic.

3. The study of abnormal breast milk has been concluded and the results will be ready for publication shortly.

4. A study of the digestibility of the banana in children from five to thirteen years of age, covering a period of five months, has been carried through. Food, urine and faeces were collected quantitatively for five groups each of four children and for four day periods preceded by a period on the food being used. Each group of chidren was studied on the diet including bananas and on the control diet without bananas. Three to six bananas a day according to circumstances were used. The collected material was analysed for fat, nitrogen and certain ash constituents and the percent of the intake retained was computed for each constituent determined, the so-called digestibility quotient.

Through the liberality of the United Fruit Company and the Fruit Despatch Company all bananas necessary for the study were supplied and the services of an expert nurse provided for securing exact collections of the material for analysis. The results will be ready for publication shortly.

5. Considerable time has been spent on the study of the micro-methods for the determination of sodium and potassium and some satisfactory modifications of present methods seem to have been arrived at.

6. The cause of acute intestinal intoxication is being investigated from both the chemical and the bacteriological standpoint. This condition is a large factor in infant mortality during the late summer and autumn months. Many valuable data have already been accumulated to date but because of the elaborate nature of the work it is impossible to give any definite conclusions at present.

7. Two of the hospital internes have made use of the resources of the Chemical Research Laboratory in work on special problems as follows:—

(*a*) Effect of various diets and treatment on volume of urine, urea and chloride content of the urine in diabetes insipidus.

(*b*) Comparison of various fabrics as to their suitability for infants' and children's wear as regards conduction of heat, absorptive power, irritating effect on skin, etc. Extremely interesting results of a practical nature have been obtained from this work and will shortly be ready for publication.

(*c*) Study of the effect on the urinary output of nitrogen, urea, chloride, organic acids and carbonates as affected by the various methods used in the treatment of pyelitis.

Department of Pharmacy and Pharmacology, under direction of Dr. V. E. Henderson

The researches conducted by the department have proved long and difficult and the results in a number of papers disappointing. The quality of the work has however been high.

With the aid of Dr. Sweet I have carried on a series of very difficult experiments to determine the location and connections of the respiratory centre.

Prof. Lucas has isolated a new anaesthetic gas of high anaesthetic potency and having a low toxicity, which will enable several important problems in regard to anaesthesia to be undertaken in the future.

Dr. McGonigle is bringing to an end a long series of technically difficult and time consuming experiments on the subject of the action of pituitary extract and water and salt excretion. It has led to a useful review of the whole field of diuresis by the department of great value from a teaching as well as a research standpoint.

Physics, under direction of Professor J. C. McLennan

During the session 1928-29 there were 30 graduate students in attendance. Of these eleven were formally enrolled for graduate instruction for the degree of Master of Arts and seventeen for the degree of Doctor of Philosopny. During the session the degree of Master of Arts was conferred on six students in the department and the Degree of Doctor of Philosophy on three students.

Advanced courses of lectures on theoretical physics were given by the regular members of the professoriate of the department, by several of the research associates, and by others who were specially invited by the university to do so. Among the latter were Professor Mulliken of the University of Chicago who delivered six lectures on Band Spectra, and Professor Hund of the University of Leipzig who gave two lectures on "Some characteristics of molecular spectra." Professor Ornstein of the University of Utrecht also gave lectures on (1) "The Intensity of Spectral Lines." (2) "The Properties of Transformer Oils." (3) "The Role of Statistics in Theoretical Physics." All these lectures were attended by varying numbers of graduate students, and members of staff from our own and other departments of the university.

The researches carried out or directed by the different members of the staff during the year are given in detail below. It will be seen that some of them were concerned with problems in spectroscopy, in magnetism, in crystal structure, in colloidal solutions, and others with low temperature investigations of electrical conductivity and of the photoelectric properties of metals. Other problems still, had to do with phenomena associated with cataphoresis and changes of state induced by electronic irradiation. One research of a practical nature that was of special interest to physicists and geologists was the investigation by Professor Gilchrist in the field, of the merits of a number of most promising geo-physical methods of locating ore bodies. In the course of another investigation of this type on the use of amplifying valves, Professor Burton and Mr. Pitt developed a highly sensitive method of detecting the presence of moisture in various substances of low electrical conductivity and of accurately measuring the amount of it. This method promises to have a wide application in industry.

In the report of last year reference was made to the proposed development and construction of a small scale apparatus to be used for the extraction of helium from the natural gas of the Inglewood field. This apparatus, designed in consultation with Mr. John Patterson was constructed, and successfully operated by Mr. Wilhelm during the months of July, August, and September of 1928. The investigation showed that the apparatus would supply, at a moderate operating cost, in the course of two or three months' running each year, the helium requisite for the production of the low temperatures used in the researches carried out during the session in the cryogenic division of the laboratory.

It is a pleasure to acknowledge here a gift generously made to the laboratory by the General Electric Company of Schenectady and the Canadian General Electric Company of Toronto of a complete self-contained apparatus capable of emitting powerful radiations of any selected wavelength in the range from twenty-three to thirty metres. For the operation of this and other similar types of apparatus Mr. Moloney, of Toronto, very kindly donated to the laboratory a finely constructed auto-transformer having a capacity of 5 kilovolt amperes.

The statement immediately following consists of a few notes on each of the researches carried out in the department during the session:—

A. *Researches directed by Professor J. C. McLennan.*

1. *On the Arc Spectrum of Tantalum.* By Professor J. C. McLennan, F.R.S. and A.M.I.A.W. Durnford, M.A.

In this investigation an analysis was made of the frequencies of the arc wavelengths of tantalum, and the results are being used in working out the structure of the arc spectrum of this element.

2. *Thermal Expansion of Zinc and other Metals at Low Temperatures by the Use of X-Rays.* By Professor J. C. McLennan, F.R.S. and R. J. Monkman, B.A.

Crystal spacings for a number of metals were determined at room and liquid air temperatures. From the values obtained coefficients of expansion for different directions in the crystal were determined.

3. *On the Photoelectric Effects obtained with Lead and Mercury.* By Professor J. C. McLennan, F.R.S., and R. G. Hunter, B.A.

In this investigation photoelectric effects obtained with lead and mercury are being studied with cells of different forms at the lowest temperatures. The object of the investigation is to see if the photoelectric effect exhibits any change of interest when the metal passes from the ordinary to the superconducting state.

4. *The First Spark Spectrum of Bismuth, Bi II.* By Professor J. C. McLennan, F.R.S., A. B. McLay, Ph.D., and M. F. Crawford, M.A.

The spectra of the spark produced under varying degrees of excitation, between metallic bismuth terminals, have been studied in the visible and ultraviolet spectral regions. Many lines of the singly ionisedatom have been picked out by means of their observed characteristics. New measurements of wavelengths were made whenever the available data were insufficient. An analysis of the wavelengths has revealed a term structure that comprises the low group of terms of the normal atom with outer electronic configuration $6s^2$ $6p^2$, and an intermediate and a high group of the atom with an excited electron.

5. *The Spectra of Ge III, In III. Tl III and Hg II.* By Professor J. C. McLennan, F.R.S., A. B. McLay, Ph.D., and M. F. Crawford, M.A.

The term structure known hitherto for each of the analogous spark spectra Gallium III, Indium III, Thallium III, and Mercury II consists only of a simple doublet scheme built on the lowest state nd^{10} (^2S) of the next higher ion. The important inverted ^2D term, nd^9 $(n+1)s^2$ built on the metastable state nd^9 $(n+1)$ s (3, 1D) of the next ion has been identified in each spectrum. In addition part of the higher complex term structure nd^9 $(n+1)s$ $(n+1)p$, has been identified in Mercury II and some important additions have been made to the simple doublet scheme of Mercury II and Thallium III.

6. *The First Spark Spectrum of Thallium, Tl II, Part 2.* By Professor J. C. McLennan, F.R.S., A. B. McLay, Ph.D., and M. F. Crawford, M.A.

The term structure of Thallium II has been extended ,to include some important multiplets in the visible and in the near infra-red regions. Wavelengths of the spark spectrum in the latter region have been observed and measured for the first time. Interesting comparisons have been made of the spectra of the iso-electronic sequence Mercury I, Thallium II, and Lead III.

7. *Notes on some Simple Spectra of Rare Earth Elements.* By Professor J. C. McLennan, F.R.S., A. B. McLay, Ph.D., and M. F. Crawford, M.A.

Important extensions to the term structures of the spectra of La^{++} and of Ce^{+++} have been made. Similar spectra of some of the other rare earth elements are being investigated.

8. *The Arc Spectra of Selenium and Tellurium.* By Professor J. C. McLennan, F.R.S., and M. F. Crawford, M.A.

The analyses of the arc spectra of selenium and tellurium (McLennan, McLay, and McLeod, Phil. Mag. IV, p. 486, 1927) have been extended by an experimental investigation of the ultraviolet, the visible and the near infrared spectral regions. All the low terms predicted by theory and the combinations of these terms with additional higher terms have been established.

9. *The Magnetic Susceptibility of some Single Metallic Crystals.* By Miss Elizabeth Cohen, M.A.

In this investigation the magnetic susceptibilities have been determined for single crystals of selenium, tellurium, bismuth, antimony at room temperatures and at the temperature of liquid air.

10. *The Fine Structure of Spectral Lines.* By Professor J. C. McLennan, F.R.S., and Miss Elizabeth J. Allin, M.A.

In the present investigation fine structures have been obtained for spectral lines of the first spark spectrum of cadmium and of zinc in the visible region and comparisons drawn between them and the structures found by other workers for corresponding lines in the arc spectrum of silver and of copper respectively. Lines in the arc spectrum of barium and of the first spark spectrum of lanthanum are also being studied to permit of a comparison being made between their structures.

11. *Duration of Metastable States.* By J. M. Anderson, M.A.

In this investigation a method involving the use of two alternating currents at a small phase difference apart has been used to measure the time rate of decay of metastable states in inert gases at room temperature, liquid air temperature, and liquid hydrogen temperature. Measurements on the 2^1S and 2^3S states in particular have been made with helium by means of the absorption of the lines λ5016 and λ3889 respectively.

12. *On the Raman Effect with Liquid Hydrogen.* By Professor J. C. McLennan, F.R.S., and J. H. McLeod, M.A.

In this investigation two Raman spectral lines λ4426.6A and λ4473.1A were obtained when the Hg radiation λ4358.3A was used as the exciting agent. When the Hg radiation λ4047.A was used a Raman line was obtained at λ4863.5A. The results constitute experimental proof of the correctness of Dennison's view that hydrogen at low temperatures consists of a number of two effectively distinct sets of molecules, symmetrical and antisymmetrical.

13. *Some Zeeman Effects and Associates Fine Structures for Tl II.* By A. M. I. A. W. Durnford, M.A.

Attempts were made to secure fine structure and Zeeman effects for some of the prominent lines in the spark spectrum of thallium and a special study was made of the radiations λλ4110, 4737.3, 4981.6, 5078.9, 5152.5, 5949, 6181. Results were obtained with all of them.

14. *The Conductivity of Various Metals at Low Temperature.* By Professor J. C. McLennan, F.R.S., Leslie Howlett, M.A., and J. O. Wilhelm, M.A.

The conductivity of Misch metal, metallic Gallium, Zirconium, Niobium, Tantalum and alloys of Cadmium and Antimony have been measured at the temperature of liquid hydrogen and liquid helium. Indications of superconductivity were obtained with Niobium.

15. *The Action of High Speed Cathode Rays on Acetylene.* By Professor J. C. McLennan, F.R.S., M. W. Perrin, B.A., and H. J. C. Ireton, M.A.

Acetylene was bombarded by high speed electrons issuing from a Coolidge cathode ray tube. Measurements were made on the numbers of electrons impinging on the gas and the calculations based on them indicated that the number of molecules of acetylene reacting was of the same order as the number of ions that an electron would produce in the course of its path. The reaction apparently is a monomolecular one.

16. *A Glass Spectrograph of High Light Power.* By Professor J. C. McLennan, F.R.S., and H. J. C. Ireton, M.A.

In this research a spectrograph suitable for the photography of the spectra of faint light sources, and in particular the spectrum of the light of the night sky was designed and constructed. It is proposed to use it in an extended ocean voyage.

17. *On the Raman Effect with Liquid Oxygen and Nitrogen.* By Professor J. C. McLennan, F.R.S., and J. H. McLeod, M.A.

In this investigation it was thought at first that three Raman spectral lines were obtainable with each of the two liquefied gases under irradiation by light from the mercury arc. Later investigation, however, showed that only two of these lines could be obtained regularly and with certainty with each liquid. The frequencies involved in their production were found to be the fundamental vibrational frequencies of the molecules of oxygen and nitrogen and the frequencies of the irradiating Hg wavelengths 4047Å and 4358Å.

18. *Absolute Determination of Xenon Arc Wavelengths.* By Miss Florence M. Quinlan, M.A. and Mr. J. H. McLeod, M.A.

In this investigation the wavelengths in the arc spectrum of Xenon in the region between λ6000A and λ11000A are being measured by means of a Fabry and Perot etalon.

19. *On the Raman Effect with Gases and Vapours.* By Professor J. C. McLennan, F.R.S., and I. Walerstein, B.A.

In this research the Raman effects obtained with the gases oxygen, nitrogen, hydrogen and hydrogen chloride and with the vapours of the alkali metals were investigated.

20. *On the Oxygen Arc Spectrum.* By Professor J. C. McLennan, F.R.S., and W. D. Scholfield, B.A.

In this investigation the arc spectrum of oxygen within the range λ2000A to λ10500A has been photographed with the auroral green line showing faintly in some cases and with high intensity in others. The plates are being investigated to see if the wavelengths given by $\gamma = {}^3P_{012} - {}^1D_2$ and by $\gamma = {}^3P_{012} - {}^1S_0$ can be identified.

B. *Researches directed by Professor E. F. Burton.*

1. *The Effect of Temperature on the Coagulation of Pure Colloidal Solutions.* By Professor E. F. Burton and Mrs. Beatrice Reid Deacon, M.A.

The work is a continuation of experiments initiated the previous year. They deal with a new field in work on colloidal solutions in that the only coagulation means employed is a rise in the temperature of the solution. The results of this work are being presented this year by Mrs. Deacon in a thesis for the degree of Ph.D. The expense of this work is borne conjointly by the department of physics and the Banting and Best chair of medical research.

2. *The Use of Scattered Light Phenomena in the Observation of Coagulation in Colloidal Solutions.* By Professor E. F. Burton and Miss May Annetts, B.A.

A technique developed by Professors Kenrick and Martin of the department of chemistry has been adapted to the purpose of following minute changes in the colloidal solutions during the progress of coagulation induced by the addition of electrolytes. The preliminary work has given very interesting results and promises well for the future.

3. *A New Method of the Measurement of Moisture.* By Professor E. F. Burton, and Arnold Pitt, B.A.

Work on an extremely delicate method of measuring the electrical conductivity of materials of fairly low conductivity, which was developed in the department of physics during the previous year, has been continued under a grant from the National Research Council (Ottawa). Special attention has been given to proving the adaptability of the method for the measurement of the moisture content of wheat. The performance of this instrument was compared with ordinary commercial methods in the Research Laboratory of the Dominion Grain Commissioners in Winnipeg, and the results promise well for the commercial application of this apparatus to agriculture.

C. *Research directed by Professor John Satterly.*

The Ridge at the Boundary of Clean and Contaminated Liquid Surfaces. By Robert Turnbull and Professor John Satterly.

In continuation of the work of Thompson, Mills and Satterly the boundary ridge between adjacent liquid surfaces has been studied and the effects of surface tension, viscosity and specific gravity on its shape, motion and distinctness carefully noted. The methods used include that of the ascending liquid column, the rotating disc and the Burdon drainage plate.

D. *Researches directed by Professor L. Gilchrist.*

1. *The Measurement of the Conductivity of Soils and Mineralised Rocks.* By J. D. Leitch and L. Gilchrist.
2. *Investigation of Electrical and Magnetic Methods of Exploration for Ores.* (In collaboration with Dr. J. B. Mawdsley of the Department of Mines, Geological Survey).

E. *Researches directed by Professor H. A. McTaggart.*

Research work is being carried on as time permits on the following problems:

1. The properties of thin films of oil inside bubbles of air in water.
2. The Brownian Movement in thin oil films on plane water surfaces.

The study of surface films is attracting a good deal of attention at present and it is hoped that a contribution to knowledge in that field may result from these researches.

Physiology, under direction of Professor C. H. Best

Research on carbohydrate metabolism has continued. Dr. Soskin has investigated the effects of high protein diets on carbohydrate utilisation of diabetic dogs. Mr. Hershey and Dr. Soskin have obtained interesting results in the study of a factor in pancreas, in addition to insulin, which is necessary to maintain life in diabetic animals. Mr. dePencier has studied the carbohydrate equivalent of large doses of insulin. Mrs. Proctor has secured interesting information in an investigation of the carbohydrate reserve of trained as compared with untrained muscles. Miss Ridout and Miss Lansdorp of the department of physiological hygiene, have conducted experiments in this department on the respiratory quotient of diabetic animals under certain conditions and on the effect of repeated administration of histamine to dogs.

Dr. Fidlar has continued his work on gas analysis and respiration. Mr. Hodgson and Mr. Johnston, under the direction of Dr. Taylor, have continued Dr. Taylor's research on the excretion of calcium through the small bowel after parathyroidectomy in cats and dogs. They have also investigated the effects of a number of other procedures on calcium excretion.

Dr. Irving with Mr. Ferguson and Mr. Plewes, has already made considerable progress in an extensive investigation of the participation of tissue carbonates in the regulation of acid-base equilibrium. In the course of this investigation Mr. Ferguson and Dr. Irving have developed a reliable method for estimating the total carbon dioxide content of muscle. New and interesting data on the dissociation curve for muscle and the hydrogenion concentration of mammalian muscle have been obtained. The buffer value of muscle has also received attention.

Dr. Lois Fraser has been a voluntary worker in the department. She is continuing her work on capillary circulation. A report of the results of some of this work has recently been published.

Dr. Guyatt, working under the auspices of the Banting Foundation, has extended his study of the significance of certain rhythmical muscular contractions.

Political Science, under direction of Professor E. J. Urwick

The department has been engaged during the past four years in conducting a preliminary survey of the basic industries of the Canadian shield. In the first year a special study was made of the fur trade. The relation of the fur trade to the present political boundaries of Canada was worked out and the Canadian shield was shown to be the basic geographic factor in the establishment of those boundaries. The conclusions were made available to the public through the Department of University Extension in the form of individual studies by students of the fourth year. Finally the main conclusions were incorporated in two volumes, H. A. Innis, *The Fur Trade of Canada* (Toronto, 1927) and H. A. Innis, *The Fur Trade in Canada An Introduction to Canadian Economic History* to be published early in 1930 by the Yale University Press. After the preliminary survey of the fur trade, a study was made of the forest industries including lumbering and pulp and paper. The conclusions were again made available through the Department of University Extension and it is hoped that separate volumes embodying the main conclusions on the two industries will be made available in the not distant future. During the year 1928-9 studies were prepared on the third basic industry of the Canadian shield, mining, and these we again made available through the Department of University Extension. These studies conclude the series on the Canadian shield. The main outlines of the basic industries have been worked out and the general character of the larger problem of the relation of the Canadian shield to Canada's economic development has been determined.

The incidental results of the programme of work have been evident in several directions. Extensive travelling has included a trip down the Mackenzie River for the study of the present fur trade, to the Yukon and Alaska for the study of placer mining and to the Maritimes, Northern Quebec and Northern Ontario for the study of lumbering, pulp and paper and mining. It is proposed to complete the survey during the coming summer by visiting mines in Northwestern Ontario, and in Northern Manitoba, and by investigating at first hand the possibilities of the Hudson Bay route in its relation to the industries of the Canadian shield. We have acquired a valuable collection of slides and photographs in connection with each of the industries studied and we have been successful in acquiring the records of some important firms, although work in this direction has been seriously handicapped by a lack of suitable storage facilities.

We have gained through the connections established with a large number of men directly engaged in the industries, in government departments and in departments of the university. The faculties of the school of forestry and of the mining departments of the university have given invaluable assistance.

In addition to the survey of basic industries the department has been engaged in directly encouraging an interest in Canadian economics. It has been felt that Canada has suffered materially in having no separate medium in which valuable articles on Canadian economics could be published. Accordingly a start has been made in what is hoped will become an economic journal and the beginning number was published early in 1929, *Contributions to Canadian Economics*, Vol. I. The second number is ready for the press, and it is most encouraging to note that it has been made possible through the co-operation of other Canadian universities. These volumes include a bibliography of Canadian works and articles on subjects relating to Canadian economics from 1925 to the present. Among the most urgent needs of research in economics in Canada at present are the establishment of a journal of high standing, the development of a bibliography in Canadian economics, and the extension of library facilities, as well as the development of a spirit of co-operation in problems of research between Canadian economists. It is hoped that the University of Toronto will be able to do its share in the attainment of these aims.

Psychology, under direction of Professor E. A. Bott

Fourteen students pursued investigations under members of the staff in this department during the past session.

The degree of Doctor of Philosophy was conferred upon one student, Mr. C. N. Clark, M.A. (The relation of binocular rivalry to the intensity ratio of retinal stimuli, Professor Bott).

The degree of Master of Arts was awarded to eight students, three with grade A, four with grade B, and one with grade D. Professor Blatz supervised the work of Dr. Maltby, Miss Langstaff and Mrs. Leslie; Professor MacPhee that of Mr. Bernhardt, Miss Dow and Dr. Franks; Professor Chant that of Miss Smith; and Mr. Ketchum that of Mr. Myers.

The following subjects were studied:—

Mrs. R. D. Allin, M.A.—Laughter in young children.
P. B. Ayres—A study of right and left handedness among fifty children.
K. S. Bernhardt—A statistical study of factors affecting the standing of a group of university matriculants.
C. N. Clark, M.A.—The relation of binocular rivalry to the intensity ratio of retinal stimuli.
Miss L. Dow—An Information—Recall Test.
Dr. R. McL. Franks—A comparative study of depressed female patients in the Toronto Psychiatric Hospital.
J. D. M. Griffin—An experimental study of reaction times to major and minor chords (with Mr. D. J. Wilson).
Mrs. L. F. Johnson—Workshop activities of preschool children.
Miss C. Langstaff—A comparison of the responses of chimpanzees and human subjects under similar controlled situations.
Mrs. S. W. Leslie—Social factors affecting the behaviour of juvenile delinquents.
Dr. L. F. Maltby—The foster child of preschool age.
C. R. Myers—The child and the comic strip.
Mrs. H. S. Ringland—Tics and mannerisms in children.
Miss R. M. Smith—The effect of undergraduate instruction upon the oral response to a selected list of stimulus words.
Professor W. E. Blatz—Forms of behaviour among public school children (with Miss H. M. Shepherd).

Professor E. A. Bott—Thresholds of discrimination in sound perimetry with a constant stimulus.
Professor S. N. F. Chant—Factors in the selection and management of personnel in industry.
Mr. J. D. Ketchum—Social adjustment of boys in a selected neighbourhood.
Professor E. D. MacPhee—Analysis of the learning processes of mentally handicapped children.

Department of Therapeutics, under direction of Dr. R. D. Rudolf

Dr. Arthur G. Smith, our research fellow, has put in a lot of good work on the difficult subject of visceral pain and it looks as if the results would be of considerable value. The work is not yet finished and will have to extend into the next academic year.

SCHOOL OF ENGINEERING RESEARCH
FACULTY OF APPLIED SCIENCE AND ENGINEERING

The progress of the School of Engineering Research during the past year has been quite satisfactory. However, there is an increasing difficulty in obtaining research assistants for work in the school due to the great demand for our graduates by industrial and engineering firms. This difficulty has been experienced by all departments in the faculty. It seems that the only remedy, if we are to secure suitable graduates for investigation work, is to increase the salaries paid to research assistants and as a consequence increase the sum annually appropriated to this faculty for research.

In this connection it is desirable to consider the advisability of commencing in a small way the appointment of men to the permanent staff for research purposes. These men could be recruited from research assistants of outstanding ability who have proven their worth, and who have, for a considerable time, been sessional appointments. If investigations of major importance are to be carried out in this faculty the assistance is required of investigators more experienced than men who have just graduated. Having prepared men in research the university loses them just when they have reached the stage where, under competent direction, they might solve important research problems. It is true that for the most part the function of the university might legitimately be considered to cease here, and these men trained in research, passed on to research foundations and industrial research laboratories. However, it must be remembered that these latter organisations are interested primarily in the solution of problems commercially profitable and not in the investigation of the principles underlying those problems. This latter is the research field of the university and if the university is adequately to discharge its duty in the general scheme, a higher grade of research assistant must be available. And in order to secure him some degree of permanency must attach to his position, with the knowledge that promotion in rank and salary will be the reward of successful research effort.

The following researches were in progress during the past year:

Department of Civil Engineering

Under the direction of Professor L. B. Stewart.

Investigation of the Elastic Caternary—A solution of the problem of the correction of tape measurements has been aimed at which is expressed in a more concise and precise form than has previously been obtained. A single equation gives all three corrections: for extension, sag, and grade, and in a form adapted for practical use.

Under the direction of Professor P. Gillespie (with Messrs. Hughes, Jackson and Fox)

During 1927-28 an experimental study of structural welding under the School of Engineering Research, assisted by the National Research Council and certain Toronto Industrialists, was carried out. Close co-operation with the American Bureau of Welding insured a rational programme and avoided duplication. The report of this work was published in the fall of 1928 under the title "Report on Pilot Tests Conducted for the Structural Steel Welding Committee of the American Bureau of Welding". This report was subsequently reprinted in the Journal of the American Welding Society.

Another bulletin by the same authors which emanated from the same study and which is entitled "Shear Stress in Certain Thin Fillets" was published at the same time. In this the theoretic behaviour of fillets under stress is related to and compared with their performance in service.

It is planned to continue the experimental study of structural welding during the coming summer.

Under the direction of Professor C. R. Young.

Tensile value of rivets—During the year a considerable amount of work was done on the resistance of rivets to a combination of tension shear and flexure with results that were very gratifying. Five thousand copies of an advance paper on the subject which was published in the Canadian Engineer, have been ordered by the American Institute of Steel Construction. A paper dealing with the whole question of tension on rivets will shortly be published in the Bulletin.

Pressure on deeply buried sewers—During the year many additional readings have been taken on the fourteen pressure cells in place on the deep sewers of North Toronto. This work will need to continue for a year or more yet before a paper can be prepared.

Under the direction of Professor A. T. Laing.

A study has been made of the physical properties of sub-grade soils with a view to securing greater stability of road foundations.

Department of Mining Engineering

Under the direction of Professor H. E. T. Haultain (with C. F. Burk, Nipissing Research Fellow).

A study has been made of certain fundamentals of the cyanide process.

Under the direction of Professor F. C. Dyer (with A. D. Dickson).

Following up previous work on the fundamentals of the flotation process, means for automatically controlling the surface tension of mill pulps has been devised and developed.

(With H. L. McClelland)—An investigation into the fundamental principles of stratification of mixed sizes of particles by agitation as it applies to the concentration of ores has been made.

Department of Mechanical Engineering

Under the direction of Professor J. H. Parkin.

(1) Interference Research—The work has been completed on the interference between wings and fuselage, and the report is in preparation for Bulletin No. 8.

(2) Undercarriage Investigation—The experimental work on the relative interference effects of wheel, ski and float undercarriages has been completed and the report is in preparation for Bulletin No. 8.

(3) Flying Boat Stability—The work on this investigation is still proceeding. A considerable amount of work has been done on the wind channel portion of the research. Good progress has been made with the theory. Good agreement has been secured between results by the free and by the forced oscillation methods.

Under the direction of Professor E. A. Allcut.

An investigation was made on the influence of different variables on the power and economy of a six cylinder gasoline engine. Some new results were obtained, notably that a variation in strength of mixture had no effect on power, but had a considerable influence on economy.

The comparative effects of different gasolines were studied and the effect of changing cooling water temperatures. The results obtained are being published in Bulletin No. 8.

Further progress was made in connection with a new method of measuring rapidly fluctuating temperatures in the exhaust pipe of a two stroke cycle oil engine. The oscillograph is completed, but considerable experimental work has been necessary to establish the characteristics of the radio tubes employed. This work is still going on.

Department of Chemical Engineering

Under the direction of Professor J. W. Bain (with W. E. Nichol).

Investigations have been carried out previously by the senior investigator with the object of ascertaining the nature of the compounds formed by the action of sulphur dioxide upon lignin. Difficulties were encountered in purifying these compounds and in the present investigation attempts are being made to prepare the compounds in a purer state by first separating the lignin from spruce in as pure a condition as possible, then subjecting it to the action of sulphur dioxide. In spite of the statements in the literature to the contrary we have been successful in causing this reaction to take place, and are now engaged in a study of the compounds which are formed. No final result has as yet been obtained, but we hope to reach some definite conclusion before the 30th of June.

Under the direction of Professor E. G. R. Ardagh (with C. M. Furber).

The problem of removing thiophene from benzene has been carried to completion, and the results have been published in the Journal of the Society of Chemical Industry, Volume 48, 1929, pages 73T to 76T, inclusive, under the title "The Removal of Thiophene from Benzene, and a New Method for the Preparation of Thiophene—Free Benzene on a Laboratory Scale".

Under the direction of Professor M. C. Boswell (with Dr. R. R. McLaughlin).

A research has been commenced on the oxidation of petroleum hydrocarbons of the methane series, to fatty acids.

(With C. H. Bayley)—Work upon the isolation and concentration of sulphur dioxide in gas mixtures containing a small proportion of this gas was commenced.

(With G. P. Beal)—The study of the catalytic reduction of sulphur dioxide to elementary sulphur has been continued.

Under the direction of Mr. E. A. Smith.

An industrial research problem is in progress on the production of glacial acetic acid from the liquor obtained from the destructive distillation of hardwood.

Department of Electrical Engineering

Under the direction of Professor T. R. Rosebrugh.

An investigation by Professor T. R. Rosebrugh is in progress leading to the analytical and graphical solution of a very general class of numerical problems relating to the steady state of long electrical transmission systems.

(With C. I. Soucy and B. deF. Bayly)—A precision bridge has been invented and constructed for the measurement of frequencies in the audio range. The particular instrument constructed has a range from 50 to 10,000 cycles per second. It is very easy to operate and is direct reading. A paper covering this will shortly be published by the Institute of Radio Engineers.

(With B. deF. Bayly)—An analytical and experimental study has been completed of the form of the total amplification curve resulting from a number of stages of radio-frequency amplification. Practically useful equations have been developed.

Under the direction of Professor H. W. Price.

Further progress has been made on a research on the control of power transmission frequencies. The apparatus now seems capable of controlling to about one part in five thousand under steady load conditions. Its exact performance is in doubt for lack of sufficiently dependable reference standards from which to measure.

Department of Metallurgical Engineering

Under the direction of Professor R. J. Montgomery.

During the coming summer the survey of the ceramic industry of Ontario started last summer will be continued. Various ceramic plants, particularly those of the heavy clay products industry will be visited. A report for the Ontario Department of Mines will be prepared.

REPORT ON RESEARCH IN THE FACULTY OF DENTISTRY

The following problems have been under investigation in the Faculty of Dentistry during the past session:

A study of the comparative strength of porcelain and other dental filling materials and of the effect of heat on dental porcelains in an endeavour to obtain for the dental porcelain worker definite information concerning the crushing strength of porcelain, its characteristics and properties, by F. Harold Wirth.

Studies of the composition of saliva and its variations under certain dietary changes, by W. Seccombe and E. F. Trent.

An investigation to determine the best bevel for dental cutting instruments, by T. E. Hayhurst.

Investigations into the classification of cavities and the selection of filling materials; the selection, arrangement and sterilisation of root canal instruments and equipment; and the physical, chemical and therapeutic properties of root canal materials, by A. E. Webster and L. F. Krueger.

An anatomical and clinical study of the direct approach technique in mandibular conduction anaesthesia as described by Craven, Levitt, Dieulafe and Lindsay, by A. C. R. McLeod.

Studies in partial denture impressions and engineering in dentistry, by W. E. Cummer.

A study of impression materials for the semi-dentulous mouth, by T. N. Scott.

An investigation of the nature, effect, treatment and prevention of the maxillary residual area, by H. M. Robb.

A comparative study of microscopic and radiographic evidences of dental disease, by A. B. Haverstock.

A study of diseased teeth as a focus of infection and of their influence on the blood stream, with special reference to the polynuclear count, in an endeavour to find a sensitive and specific diagnostic means for dental infections, by W. H. Godsoe.

REPORT OF THE COMMITTEE FOR EXPERIMENTAL RESEARCH IN MEDICINE

(*Dr. D. E. Robertson, Secretary*)

The Laboratories of the Committee of Experimental Research have maintained and made available technical assistance to those members of the medical staff who wished to carry out experiments requiring the use of animals.

A. Cowan has rendered excellent and skilful service to the laboratory, and the assistance of a man to look after the animals has given the greatest satisfaction.

During the year the following members of the staff have used the laboratory for conducting experiments:—

Professors Klotz, Harding, Hendry; Doctors Price, Ham, Robertson, Murray, Van Ostrand, Tisdal, Bates, Silverthorn, Shouldice, Wansborough, Nicholson, Ray.

Seven hundred and fifty experiments were conducted during the year. Autopsies done in the laboratory, of animals upon which experiments had been conducted were one hundred and eighty-two in number. In addition to this, the technician made two thousand microscopic sections.

(13) PUBLICATIONS

FACULTY OF ARTS

DEPARTMENT OF ANTHROPOLOCY

McIlwraith, T. F.—*Recent Publications Relating to Canada; Ethnology, Anthropology, Archaeology.* (The Canadian Historical Review, Vol. IX, No. 4, December, 1928, pp. 373-382).

DEPARTMENT OF INDUSTRIAL ART

Iliffe, J. H.—*Report on the Excavations at Roman-British Alchester in 1927·* (The Antiquaries Journal, Vol. IX, No. 2, April, 1929, pp. 105-136· Published by the Oxford University Press.)

DEPARTMENT OF BIOLOGY

Baillie, W. H. T. and MacArthur, J. W.—*Metabolic Activity and Duration of Life· I. Influence of Temperature on Longevity in Daphnia Magna. II· Metabolic Rates and their relation to Longevity in Daphnia Magna.* (Journal of Experimental Zoology, May, 1929.)

Craigie, E. H —*The Vascularity of Various Parts of the Central Nervous System of the Dogfish, Squalus sucklü (Girard).* (Jour. Comp. Neur., vol. 46, pp. 97-123.)

A Spanish Contribution to Modern Science. (The Canadian Forum, vol. 9, pp. 273-274.)

Dymond, J. R.—*Needlefish (Scomberesox saurus) from the Gulf of St. Lawrence.* (Can. Field Nat. Vol. 41, p. 47, 1928.)

The European Hare (Jack Rabbit) in Ontario. (Rod and Gun, Vol. 30, pp. 139-140, 1928.)

The Present range of the European hare in Ontario. (Can. Field. Nat. Vol. 42, p. 95, 1928.)

Cottus ricei from Alberta, Canada. (Copeia No. 167, pp. 39-40, 1928.)

Another Prowfish (Zaprora silenus) record. (Copeia No. 169, pp. 88-89, 1928.)

The Mammals of the Lake Nipigon region. In: A faunal investigation of the Lake Nipigon region, Ontario. (Trans. Roy. Can. Inst. Vol. 16, pp. 239-250, 1928.)

The Amphibians and Reptiles of the Lake Abitibi region. In: A faunal investigation of the Lake Abitibi region, Ontario. (Univ. Toronto Studies, Biol. Series No. 32, pp. 35-36, 1928.)

A description of Leucichthys tullibee (Richardson) based on six specimens from the type locality. (Univ. Toronto Studies Pub. Ont. Fisheries Research Lab. No. 31, 1928.)

Some factors affecting the production of lake trout (Cristivomer namaycush) in Lake Ontario. (Univ. Toronto Studies Pub. Ont. Fisheries Research Lab. No. 33, 1928.)

Scientific natural history (a review of Elton's animal Ecology). (Can. Field-Nat. Vol. 43, pp. 22, 1929.)

MacArthur, J. W.—*A Spontaneous Tomato Chimera.* (Journal of Heredity, July, 1928.)

Linkage Studies with the Tomato.

Three Linkage Groups. (Genetics, September, 1929.)

MacArthur, J. W. and Baillie, W. H. T.—*Metabolic Activity and Duration of Life: I. Influence of Temperature on Longevity in Daphnia magna. II. Metabolic Rates and their Relation to Longevity in Daphnia magna.* (Journal of Experimental Zoology, May, 1929.)

Walker, E. M.—*The Odonata of the Lake Abitibi region.* (From "A Faunal Investigation of the Lake Abitibi Region", by members of the staff of the Royal Ontario Museum of Zoology). (University of Toronto Studies—Biological Series No. 32, 1928.)

The Woodlice of Oniscoidea of Canada. (Can. Field Naturalist, XLI No. 8, 173-179, 1927.)

The Nymphs of the Stylurus Group of the Genus Gomphus, with Notes on the Distribution of this Group in Canada. (Can. Entomologist, LX, No. 4, 79-88, 1928.)

DEPARTMENT OF BOTANY

Bailey, D. L.—*Stem Rust in Western Canada.* (Dom. of Can. Dept. of Agr. Tech. Bul. N.S. 106, 1928.)

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(14) REPORT OF THE DEPARTMENT OF UNIVERSITY EXTENSION AND PUBLICITY

W. J. Dunlop, Esq., B.A., B.Paed.)

During the academic year 1928-29 there were 3,399 adult students enrolled in courses and classes in this department while over 18,400 took advantage of the extension lectures provided.

Gratifying progress was shown in the Teachers' Course, 9 teachers graduated in September and 25 in May. There were 709 enrolled in the course, of whom 175 took work in the Summer Session. 294 pursued their studies in evening or Saturday classes during the winter at the University, in Hamilton, Fort William, and Windsor. In the past nine years, 193 teachers have secured the degree of Bachelor of Arts in this course, of whom six are now Inspectors of Public Schools; most of the others have, on graduation, secured almost immediate promotion to positions in the secondary schools of Ontario. During the year, 119 teachers commenced the course. These figures give some indication of the manner in which teachers are taking advantage of the special facilities which the University offers them. As has been pointed out in previous reports, many of these teachers are not content when they have secured the Arts degree but proceed almost immediately to take courses in pedagogy, to qualify as inspectors, to become specialists in some university department, or to become commercial specialists. When it is noted that almost twenty per cent. of all the students enrolled in Arts in the University are in the Teachers' Course, it will be realised what an important factor this course has become.

The summer courses in honour subjects were carried on as in previous years for the benefit of teachers who wish to become specialists in various departments.

269 Extension Lectures were delivered during the year. These were distributed as follows: Alliston 2, Barrie 6, Belleville 8, Bowmanville 2, Brantford 5, Brockville 3, Caledonia 1, Chapleau 1, Clinton 5, Copetown 1, Dunnville 1, Erin 1, Exeter 1, Fergus 1, Fort William 1, Galt 1, Georgetown 1, Goderich 1, Guelph 2, Hamilton 31, Kitchener 4, London 1, Midland 2, Mount Forest 4, Newmarket 1, Niagara Falls 1, North Bay 2, Oakville 1, Orillia 1, Oshawa 1, Ottawa 2, Owen Sound 3, Peterborough 4, Port Arthur 1, Port Colborne 3, Port Hope 1, Regina 1, Rockton 1, Sarnia 3, Sault Ste. Marie 5, St. Catharines 6, Smith's Falls 1, St. Thomas 2, Stratford 1, Sudbury 3, Thornbury 2, Thorold 1, Toronto 77, (and also 37 for Canadian School of Missions), Trafalgar 1, Welland 5, Whitby 1, Windsor 13, Wingham 2.

The members of the staff who gave Extension Lectures this year were: the Director 40, Professor G. A. Cornish 26, Professor T. F. McIllwraith 23, Dr. W. E. Blatz 19, Professor E. Goggio 14, Professor J. F. Macdonald 10, Professor M. Hutton 9, Dr. Maltby 9, Dr. Porter 8, Dr. E. J. Pratt 8, Dr. Defries 5, Miss R. Home 5, Mr. A. Lismer 5, Professor G. W. Brown 4, Professor J. Cano 4, Professor W. J. K. Harkness 4, Professor W. A. Irwin 4, Professor H. S. McKellar 4, Dr. McKinnon 4, Professor E. F. Burton 3, Professor A. P. Coleman 3, Professor B. Fairly 3, Dr. G. W. Howland 3, Professor G. E. Jackson 3, Professor D. R. Keys 3, Professor N. MacKenzie 3, Professor E. S. Moore 3, Mrs. E. A. Bott 2, Dr. A. Brady 2, Professor A. T. Laing 2, Professor H. Lasserre 2, Professor W. J. McAndrew 2, Professor W. A. Parks 2, Dr. Smith 2, Miss G. I. Wookey 2, Professor P. E. Briquet 1, Professor J. T. Burt-Gerrans 1, Professor C. A. Chant 1, Professor J. R. Cockburn 1, Professor E. A. Dale 1, Mr. N. J. Endicott 1, Miss M. Foster 1, Dr. C. M. Hincks 1, Mr. Horning 1, Dean C. D. Howe 1, Mr. J. H. Iliffe 1, Miss A. Laird 1, Professor E. D. McPhee 1, Professor H. McTaggart 1, Professor H. H. Madill 1, Miss R. Moss 1, Professor M. Poirier 1, Mr. T. A. Reed 1, Professor C. B. Sissons 1, Professor R. B. Thomson 1, Professor F. H. Underhill 1, Professor W. S. Wallace 1, Professor C. H. C. Wright 1, Professor R. K. Young 1.

From these figures it would appear that the oldest form of extension service, the local lecture, has lost none of its popularity.

Correspondence courses in Upper School, Middle School, and Commercial subjects were taken by 372 students, nearly all of them teachers who were seeking higher certificates and were taking this means of preparing themselves for the summer courses offered by the Department of Education. 240 teachers took correspondence instruction in preparation for the Summer Session. Other correspondence students numbered 46. In this University the correspondence course never takes the place of direct instruction; it is used as a preparation or as a means of "brushing up" or as a supplement. For example, in the Teachers' Course students may be assisted by means of correspondence courses, particularly if they live far from larger centres of population, but they must attend lectures either in winter or summer, in the subjects on which they write university examinations. So used, that is, as a supplement, the correspondence course has an important value.

Evening classes—classes which do not lead to any credit, degree, diploma or certificate—have flourished this year as never before. They were held in University College, in the Earlscourt and Beaches Public Libraries, in Oshawa, Windsor, and Waterford. Instruction was given in accounting, aeronautics, advertising, appreciation of art, French, economics, English composition and literature, finance, gemology, journalism, modern drama, modern English fiction, modern English poetry, psychology, and public speaking. The total enrolment was 1,488.

Since these evening classes were separated from W. E. A. classes and the fee increased, a remarkable improvement has been evident. The classes are larger and more numerous, the membership is more homogeneous, the interest and enthusiasm are greater, and there is a much better average of attendance. It is only two years since these classes were put on the present basis. The scheme is, therefore, only in its infancy. More and more adult men and women are seeking education, not for university credit, but for the pleasure and the intellectual profit they derive from study.

The Workers' Educational Association has been doing its own work in its own way with a most satisfactory measure of success. The membership in Hamilton this year was 270; in Toronto, 233. Trade union support has been secured this year to a greater extent than ever before. Several fruitful conferences were held with labour leaders. In Toronto the trade unions are beginning to see the value of the W.E.A. and are taking means to support it, both by providing students and by rendering financial assistance. Mr. Drummond Wren, the Secretary-Treasurer, has done remarkably good work and has been most successful in arousing an interest in education among trades unionists. It has been arranged that next year there will be fewer classes and that all but two of them will be held in university buildings. While the classes will be fewer because the subjects of instruction will be confined to those of immediate interest to the workingman, it is confidently expected that the enrolment in these classes will be much larger. There has been a new spirit in the W.E.A. this year.

In the course in Occupational Therapy there were 17 second year and 36 first year students. At the examinations the percentage of failures was not large. As before, the Government of Ontario offered positions in the mental hospitals, at good salaries, to all who graduated. From Western Canada several requests have come for Occupational Therapy aides and, so far, it has been difficult to comply with these. However, it is hoped that, when the present first year class has graduated, the supply of aides will almost equal the demand and that hereafter a class in any one year need not exceed 24, which number represents the limit of the workshop accommodation without duplication of instruction. This course has not only opened a new, useful, and remunerative career for young women but has also filled an urgent need in the mental hospitals of the province.

A course in Physiotherapy has been arranged and is to commence with the opening of next session. It is expected that this course will be just as useful, in its own field, as the course in Occupational Therapy has proven to be.

The course in Teaching and Administration for Graduate Nurses (a one-year course), which was offered this year for the first time, has been most satisfactory. Twenty nurses graduated. Already there are nearly enough applications for next year. Several hospitals have provided scholarships of their own and are sending members of their staffs to take the course. The establishment of this course has been the beginning of a new epoch in the progress of nursing in Ontario. The Department of Public Health Nursing has rendered most efficient co-operation in the carrying on of this new course.

A great deal of time and energy was expended during the year in the development of university publicity. To calculate the space given within the twelve months to news of this University in the papers, magazines, and other periodicals published in Canada would be practically impossible, but the amount is enormous. News items and articles have been written and handed out almost daily throughout the year; numerous interviews have been given to reporters. To the daily newspapers of the Dominion a great many bulletins and articles have been mailed. Scarcely a day passes without some university news being given out. Whatever is news, the papers take with avidity.

Two bulletins on zoology were published; one on archaeology; one on aeronautical engineering; one on "Opportunities for graduates in science in the faculty of arts"; one on "Opportunities for graduates in applied science and engineering"; one for the department of social service; one for the department of political science; several on courses offered in this department; and one entitled "Research in the University of Toronto". The last-mentioned has elicited favourable comment from all the universities in Canada and editorial commendation from several important daily newspapers. The results of the examinations in the faculty of medicine were divided up in such a way that the local editor was notified in each case where students in his constituency were successful. It was surprising how this little service pleased the editors concerned. It might well be developed further for other faculties.

The exhibit at the Canadian National Exhibition was even more successful than usual. A great many parents came to the booth to make enquiries regarding courses for their boys and girls, and many prospective adult students were given advice. The great value to the University of this exhibit is that it provides facilities for those who wish to ask questions.

Another form of publicity commenced this year has consisted in visiting Collegiate Institutes and High Schools to explain to pupils the various courses offered by this University and the entrance requirements for them. The headmasters like this and the students are apparently assisted, and inspired to better effort. In doing this work I have realised how important it is, in the interests of the boys and girls, that they should be told what careers are open to them. If they are not informed, they may miss what is best in life, and they cannot know what has been arranged for them if they are not told. They do not read pamphlets and bulletins until the spoken word has aroused their interest. They do not decide on their future careers until someone tells them about university courses and, not having made the decision, their studies are not directed to some definite objective. Without doubt or question, the Provincial University owes this service to the youth of Ontario—to tell them what is available and to guide them in their choice of subjects—and I hope that the Board of Governors will make it possible to employ a suitable man for this urgent piece of work. This is not merely publicity (though it is that) but it is a form of public service that cannot, in fairness to our constituency, be neglected. The most troublesome problem facing the parents of Ontario to-day is what advice to give their children regarding education after they leave the secondary schools. I have given many lectures on this topic during the year, have answered many questions, dealt with many special cases, accepted many invitations to visit secondary schools. The boys and girls do not know, their parents do not know—and they look to the University of Toronto to tell them and to give them advice.

Each year the Department of University Extension and Publicity undertakes at least one new enterprise in the service of the public. The one outlined in the above paragraph is, in my opinion, the most pressing for the coming year.

(15) REPORT OF THE ACTING DIRECTOR OF THE DEPARTMENT OF SOCIAL SERVICE

(*Professor E. J. Urwick*)

During the past session the department has been called upon to meet a serious challenge. From all parts of the Dominion urgent appeals for trained social workers have been sent to us—over forty in all during the year—and we have been unable to meet more than a fraction of the demand. The number of graduating students has remained almost unchanged for some time; but this number is now totally inadequate for the needs of the Province and the Dominion. The department is thus faced with a problem which is in its essence a double one: first, to attract many more entrants of high capacity, and secondly, to arrange the curriculum in such a way as to meet the diverse needs of modern social work, ranging from the need for leaders conversant with the general aspects of social administration to the need for specialised workers in particular fields of treatment and prevention. The curriculum has therefore been reorganised. With the co-operation of other departments in the University, fundamental courses in the different fields of social study are now offered, in addition to special instruction in modern method and practice. In this way it is hoped to raise the standard of teaching, and at the same time to induce a greater number of well-qualified students, especially graduates, to undertake the training necessary for the profession of social work.

In addition to the instruction given to full-time students, the department also provides courses for several groups of occasional students, such as those preparing for Public Health Nursing or Occupational Therapy. A beginning has also been made in the provision of special courses for Church workers and others interested in the social welfare of Toronto. It is planned, with the help of the Department of University Extension, to organise these courses on a wider basis in the future.

The director of the department, Professor J. A. Dale, has again been absent through illness during the whole session. The regular staff has been increased to meet the gap thus caused.

(16) REPORT OF THE DIRECTOR OF THE DEPARTMENT OF PUBLIC HEALTH NURSING

(*Miss E. K. Russell*)

The year 1928-29 has carried this department into more extensive work than at any previous time, this because of the new course for nurses which was started last September under the department of University Extension. The University now has three distinct diploma courses for nurses and the problems of the three are necessarily very closely intermingled although the students of the various courses are being trained for two very distinct pieces of work. One group is preparing for service in the hospital school for nurses and the other two groups are preparing for the public health field.

Perhaps the matter for greatest emphasis is the fact that both of these classes of graduates are greatly in demand throughout the Province and elsewhere. It is impossible to meet many of the requests that come to us for trained workers, requests from both the public health field and the hospital schools.

The department is handicapped in its work in that it has no residence for its students. This need is accentuated by the presence with us of so many foreign students, the value of whose time in Toronto has been markedly less because of this loss of residence life. We also feel, in as far as these foreign students are left in boarding houses, that the University is losing a valuable opportunity for broadening the residence life of its Canadian students. The work for foreign students has proven a severe strain in this small department as a great deal of individual attention is required for each one of these people.

The short courses that are being given in this and kindred departments are often looked at askance in the University and we understand that they introduce serious problems that cannot be lightly dismissed. Realising this, it is a matter of great satisfaction to know that this department is now playing a legitimate rôle in University life in that it is carrying on useful research into the problems of nursing education. Within the last three years, work has been started that involves a serious study of every aspect of the curriculum of the hospital school for nurses, and certain experiments have been undertaken on behalf of this work. This is all of great interest and should be of benefit to these schools if the experiments can be carefully enough controlled to safeguard their value. At present this is a difficult matter because the resources of this department are necessarily limited.

(17) REPORT OF THE DEPARTMENT OF MILITARY STUDIES

(*Brig.-Gen. G. S. Cartwright, Director*)

The President,
University of Toronto.

Dear Sir,

As requested, I have the honour to submit the following report on the work of this department during the session 1928-29.

Enrolments	Arts	S.P.S.	Dent. & Med.	For.	Total
1. Juniors (II Arts)	26				26
2. Intermediates (III Arts)	22				22
3. Seniors (IV Arts)	15				15
4. Special (for II, III, IV Yr. students unable to attend 1, 2, or 3)	43	26	17	1	87
5. Medical			12		12
6. Artillery	12	7	1		20
					182

Those attending the course in artillery showed great keenness, and the results of the examination were very satisfactory.

The following are the results of the November O.T.C. examination:—

3 obtained O.T.C. Certificate "A", Infantry,
1 ,, ,, ,, "B", ,, .

In February, 1929, the practical portion of the O.T.C. examination was held and the following successfully passed the test:—

8 passed Part I, O.T.C. Cert. "A", Artillery
48 " " " " "A", Infantry
16 " " " " "B", "
6 " " " " "A", Medical

Of these, 76 presented themselves for the Part II, written on the 12th and 13th March and the results—which have now been received from the War Office—are satisfactory, viz:—

6 candidates obtained O.T.C. Cert. "A", Artillery
35 " " " " "A", Infantry
8 " " " " "B", "
5 " " " " "A", Medical

One student completed the course of training with the Royal Canadian Air Force last summer and is entitled to wear the wings. Four students who attended the first year course at Camp Borden and three who attended the second year course have been recommended to continue training this year. Three have been accepted for first year training this summer and three—graduates of the Faculty of Applied Science—have been accepted for commissions in the Permanent Force, R.C.A.F.

As reported last year, facilities for practical training are lacking and this is a considerable handicap in carrying out the practical application of the instruction given in the department.

(18) REPORT OF THE UNIVERSITY HEALTH SERVICE (MEN)

(*George D. Porter, M.B., Director*)

I.

Examinations:

All the first and second year students were examined as usual in October.

Number of first and second year men	1,375
Number of senior year men examined	329
Number re-examined by specialists	27
Total number examined in the Fall	1,731

Besides these, all the students taking part in athletics were examined during the year.

Results:

Those found fit for regular physical training	93%
Those having some disability requiring supervised and special classes	4.2%
Those unfit for physical training and athletics	2.8%

The causes for physical unfitness among these thirty-nine students are as follows:

Heart disease	9
Infantile paralysis	7
Hip joint disease	3
Crippled from other causes	4
Injuries including fractures	4
Operations	3
Osteomyelitis	3
Hyperthyroidism	2
Pulmonary conditions	3
Appendicitis	1
Total	39

Though a number of men had their physical rating lowered, owing to illness or accident, during the year, over double that number had their rating raised. In other words the standard of those in the second year has always been higher than that of the same group when they entered as freshmen.

With the exception of the influenza which was rather severe and which affected a large number of students, we have been rather free from infectious diseases during the year and the general health of the students has been excellent.

The regulations regarding compulsory vaccination are working out without any friction. With general vaccination in force we shall expect to be free from any trouble in the future from small-pox which has been the cause of considerable loss of time to a large number of students in the past.

Sickness and accidents during the year:

First and second year students were granted exemptions from physical training and C.O.T.C. for one period or more owing to injuries or sickness as stated below:

Colds	216	Pleurisy	1
Influenza	59	Pneumonia	1
Bronchitis	6	Measles	1
Larnygitis	2	Scarlet fever	2
Tonsilitis	8	Mumps	4
Pharyngitis	9	Nephritis	2
Torticollis	2	Diabetes	1
Lumbago	2	Rheumatic fever	1
Colitis	2	Migraine	13
Sinus infections	5	Gastralgia	13
Paralysis of leg muscles following flu...	1	Epistaxis	2
Otitis	2	Abscess	3
Eye trouble	3	Local infections	5
Adenitis	2	Hernia	2
Dental trouble	10	Cardiac trouble	1
Neuralgia	2	Appendicitis	4
Asthma	1		
		Total	388

Skin diseases:			23
Erythema		2	
Ringworm		2	
Impetigo		2	
Eczema		1	
Scabies		1	
Boils		15	
Injuries:			130
Fractures		8	
Arm	1		
Rib	2		
Nose	3		
Finger	1		
Ankle	1		
Dislocations		2	
Sprains		79	
Contusions		24	
Cuts		2	
Burns		2	
Abrasions		2	
Blisters		3	
Operations			12
Appendicitis		1	
Hernia		1	
Ingrowing toe nail		1	
Nasal		2	
Tonsils		7	
Vaccinations			7
Blood transfusions (blood donated by students at hospitals)			3
Total			563

Special corrective and supervised classes:

There are 251 students enrolled in these classes. While there were only 4.2 per cent. of students placed here after the first examination in the fall, yet through illness and accident during the year this enrolment increased. This was also augmented by those classified as physically fit but who entered these classes for the correction of some defect, such as flat feet, slight curvature, round shoulders, etc.

Re-examinations are frequently made during the year and advice given in regard to athletics, physical training and health matters generally.

Frequent emergencies arise on the campus and a large number of students receive first aid at this office.

Education:

Lectures on first aid have been given to the first year medical students and to the students in forestry. Lectures are also given on artificial respiration to those taking part in the life saving classes. A course of lectures on hygiene is also given to the classes in occupational therapy.

It might be of interest to note that one of the questions set by the professor of physics for the annual examinations was based upon figures regarding height and weight of students, obtained from our records.

REPORT OF THE MEDICAL ADVISER OF WOMEN

(*Dr. Edith Gordon*)

II.

The Medical Office began the year in new quarters at 81 St. George Street. This gave increased space for the work of the medical adviser, and also an office for the directress of physical education, and a larger room for a corrective gymnasium. The more central location of the medical office has been appreciated by the women students.

This increased accommodation has met an immediate need, but should the arts colleges other than University College require physical examinations of their entering women students, and physical training work for the first year of their attendance, these quarters would immediately be too small.

It is most earnestly to be hoped that some adequate plan will shortly be formed and carried out for providing for the physical needs of the women of the University, on an equal basis with that of the men.

Physical Examinations:

During the year, 750 complete physical examinations have been made. Of these 409 were required of entering women in University College, the faculties of medicine, household science, architecture and dentistry; the Ontario college of education, and the department of occupational therapy. The remaining 341 examinations represented all faculties, colleges and departments of the university, and were voluntary on the part of the students.

The physical fitness of the large proportion of the women students was gratifying to note. Many correctable defects were discovered, however. These were pointed out to the students and remedies suggested. It is thus hoped that many serious conditions may be prevented from developing and chronic diseases of later life checked.

I.	Preventable and correctable defects (Poor posture, functional spinal curvatures, weak feet, constipation, underweight, overweight, etc.) Defects that could be corrected by remedial exercises and proper personal hygiene.	68.3%
II.	Defects that could be corrected by treatment (Diseased tonsils, eye defects, diseased teeth, etc.)	20.2%
III.	Uncorrectable defects, but which could be prevented from becoming more marked or developing into acute conditions (Organic heart lesions, organic spinal curvatures, chest conditions, etc.)	1.5%
	Total number of defects	1161

Group A. Compulsory examinations (entering women students of University College, faculties of medicine, household science, architecture, dentistry, Ontario college of education, department of occupational therapy).

Number examined	409
1. Students physically able to participate in required physical training	83.9%
2. Students requiring supervised or corrective exercise	12.2%
3. Students unable to take physical training (temporarily or permanently)	3.9%

Group B. Voluntary examinations (all faculties, colleges and departments).

	341
1. Students physically fit to participate in physical training	86.3%
2. Students requiring supervised or corrective exercises	7.5%
3. Students unable to take physical training (temporarily or permanently)	6.2%

The work in the corrective classes has been much more satisfactory since a larger room has been available. The classes have been larger and more interest has been evinced and greater progress noted.

Re-examinations of 105 students was made during the year. These were of students taking the corrective gymnasium work, and those exempted from physical training because of some physical defect.

All students participating in basketball, baseball, hockey and swimming are required to present a certificate of physical fitness before taking part in the sport. Large numbers from all colleges and faculties were given examinations before entering into these competitions.

Many students are appreciating the value of yearly physical examinations, and come at the beginning of each year for an examination.

2nd examination	149
3rd "	54
4th "	39
5th "	13
6th "	4
7th "	2
	261

Of these, progress or otherwise was noted:—

Marked improvement	4.9%
Slight improvement	60.2%
No noticeable improvement	9.6%
Retrogression	25.3%

Consultations:

There have been 2,050 consultations. The larger number of these have been with students regarding personal hygiene; treatment for minor injuries; diagnosis of beginning illness, and minor ailments of various kinds. Where the condition was of more than the simplest character, the student was referred to her family physician for treatment, or where the student was from out of town, to one of the university medical staff.

Vaccination was required of entering students by a regulation of the Board of Governors, and 72 vaccinations were performed. A few conscientious objectors to vaccination reported each month to the medical office for observation.

Lectures:

A series of three health talks based on the needs of the women as revealed by the physical examinations, were given to the students required to take physical training. These hours were arranged by Miss Coventry and were given in hours usually devoted to gymnasium work—credit was granted for attendance.

A series of four lectures in personal hygiene was given to the students in the public health nursing course.

In the course leading to a diploma in physical education fifteen lectures and demonstrations in first aid and emergencies were given to the second year class.

Needs:

The physical needs of all the women of the University can only be met in a much larger and properly equipped gymnasium and swimming pool.

For the past six years some of the entering women students have been required to take physical training work for one year only. The others, *i.e.*, (Victoria, St. Michael's, and Trinity College women) have been prevented from participation in physical training because of lack of space.

Were physical training required of the women on the same basis as of the men, *i.e.*, for two years of all women of all colleges and faculties, accommodation would need to be found to provide facilities for carrying out such regulations.

It would seem that the time has come when the women should have their needs considered, not only for physical training, but also in the matter of space for sports like basketball, baseball, hockey, tennis and swimming.

Throughout the province greater interest is being evidenced by the public, and some provision is being made in High Schools for physical education work. Is it not time that the women of the university should be provided with a suitable place for the development and maintenance of their physical efficiency?

REPORT ON ATHLETICS AND PHYSICAL TRAINING

(*T. A. Reed, Secretary, Athletic Association*)

III.

Compulsory Physical Training:

(*a*) There were 1,656 male students enrolled from the first and second years, including 54 from previous years who had failed to make the required attendance of 80%. Of these 147 had already completed two years physical training and 42 were exempted on medical grounds or by dispensation. The remaining 1,467 took physical training as follows:

In the Canadian Officers Training Corps		229
In the following sports (part time)		
Fall Term		
Rugby Football	216	
Soccer	41	
Harrier	18	
English Rugby	4	
Spring Term		
Basketball	101	
Hockey	116	
Indoor Baseball	70	
Boxing, Wrestling and Fencing	67	
Swimming	59	
Rowing	22	
Indoor Track	24	
Gymnasium	18	
		756
In Physical Training Classes		957
		1942
Less those in two or more activities		529
		1413
Repeaters from third years		54
		1467

There were 24 periods a week devoted to general physical training and a like number to corrective and special work. 23 periods a week were devoted to boxing, wrestling, fencing and gymnastics, 3 periods indoor track, 11 life saving classes, 11 "Learning to Swim" classes and 15 to general swimming. For class A1 men, playing in the interfaculty series of rugby, association football, hockey and basketball credit for physical training was allowed and several periods a week were devoted to competition in these various sports. Under the important branch of swimming, 146 men, mostly freshmen, enrolled in the "Learn to Swim" classes and 130 of these were able to pass the test successfully. 197 men enrolled in the Life Saving Class and to these men the Royal Life Saving Society of England made 229 awards of certificates and medals.

Intercollegiate Athletics:

The showing made by the University of Toronto teams in various branches of Intercollegiate competition was very satisfactory. The championships won included: Tennis, golf, senior hockey, intermediate hockey, senior basketball, intermediate basketball, boxing, wrestling and fencing, swimming and diving, water polo and intermediate track.

McGill won the senior rugby, soccer, senior track, English rugby and gymnasium championships; Queen's won the junior rugby, Loyola the intermediate rugby and R.M.C. the harrier championship.

Our rugby activities included competition in the Ontario Union and for the first time in six years our team won the championship. It was a popular victory and the sportsmanship of our men both on and off the field was notable. In the final game in Hamilton against the renowned Hamilton Tigers our men though defeated won admiration for their plucky fight against a team composed of older, heavier and experienced men.

Internationally we were again fortunate in being able to send teams across the border, our lacrosse team playing at Brooklyn and Montclair, New Jersey, our hockey team in New York and Boston against Harvard, Yale, Dartmouth and the Boston University Club, and our boxing team at the West Point Military Academy.

Interfaculty Athletics:

It is again gratifying to be able to report that our intermural sports continue in popularity and attract a large number of men who, while fond of exercise, are not proficient enough to make the first teams. The fact that 1,427 men turned out during the year shows, as I have said before, that all our athletic interests are not centered on a few men playing before a large crowd on a few occasions during the year. The record is as follows:

Series	Cup	Winners	Total number of men engaged
Rugby	Sir William Mulock Cup	Sr. S.P.S.	274 (13 Teams)
Track	W. L. Rowell Memorial Cup	S.P.S.	73
Soccer	Arts Faculty Cup	Knox	116 (9 Teams)
Harrier	J. Brotherton Cup	O.A.C.	91
Hockey	W. T. Jennings Cup	Dents	178 (16 Teams)
Basketball	Hon. Clifford Sifton Cup	Jr. Meds.	196 (19 Teams)
Boxing, Wrestling and Fencing	Francis Davidson Cup	O.A.C.	46
Indoor Baseball	A. G. Spalding Cup	Jr. S.P.S.	138 (12 Teams)
Swimming	A. M. Fitzgerald Cup	S.P.S.	35
Water Polo	H. P. Eckardt Cup	Jr. U.C.	98 (8 Teams)
Indoor Track	Toronto Cricket Club	S.P.S.	42
Rowing		S.P.S.	32 (4 Crews)
Tennis	F. Y. McEachren Cup (University Champion)	W. M. Martin (U.C. III)	54
Swimming	B. Durnan Cup (University Champion)	J. M. Goss (Ap. Sc. IV)	16
Gymnasium	H. A. Wilson Cup	S.P.S.	38

The Athletic Directorate for 1928-29 consisted of Professor M. A. Mackenzie, president; Professor C. H. C. Wright, faculty members, Dr. J. A. McCollum and Dr. W. Easson Brown representing the Athletic Advisory Board, the following elected by the undergraduates: Mr. W. A. Bean, Mr. J. M. Goss, Mr. R. M. Mitchell, Mr. M. H. Snyder and Mr. A. E. Young. Mr. H. R. Ziegler representing the Students' Administrative Council and Dr. George D. Porter and Mr. T. A. Reed, ex officio.

REPORT ON PHYSICAL TRAINING FOR WOMEN

(*Miss I. G. Coventry*)

IV.

During the session 1928-1929 there was an enrolment of 436 women students in the physical training classes, and approximately 814 gymnasium class periods conducted by the two instructresses.

The compulsory physical training class numbering 282 students was subdivided into 8 classes on account of the inadequate floor space in the undersized gymnasium, and to accommodate students who could not attend the regular class periods.

All students registered, attended the final tests in general gymnastics and corrective exercises. A very small percentage failed to meet the examination requirements.

Additional class periods of instruction in corrective and remedial work were planned for students who were medically advised to take the prescribed course. These classes were composed of ten to fourteen students who attended two and three periods a week under special supervision. This essential part of the physical work was carried on in the new quarters at 81 St. George St., where a bright and well ventilated room has been equipped for the purpose.

Marked improvement in physical defects was reported by the medical adviser for women.

The same difficulty remains as in past years in connection with the university athletic teams and clubs for organised games in the gymnasium. It was necessary to assign practice periods at times most inconvenient to the various teams.

Diploma Course in Physical Education

Keen interest is still shown in the four year physical education course leading to a diploma, in which 52 students registered this year.

An interesting and gratifying feature in connection with the course is the fact that the women graduates, who have been granted diplomas, are in constant demand as full-time physical directors in Collegiates, Normal and High Schools in Toronto, and other cities of Ontario.

Occupational Therapy Course

There were four additional classes a week for the 53 students registered in the two year course in occupational therapy. They took the prescribed course in physical education as outlined in the syllabus arranged by the department of University Extension.

Students, all years, in compulsory physical training classes	282
" " " corrective and remedial classes	38
" " " " fencing classes	12
First year students in the Diploma Course in Physical Education	24
Second " " " " " " " " "	13
Third " " " " " " " " "	9
Fourth " " " " " " " " "	6
Occupational Therapy Course (1st and 2nd years)	53
Students from University College	272
" " Victoria "	17
" " Trinity "	9
" " St. Michael's "	4
" " Faculty of Medicine	12
" " Faculty of Household Science	68
" " Applied Science	1

Swimming

There were 395 students from all colleges, faculties and departments using the swimming pool, and 442 class-periods of instruction, during the session of 8 months.

Students from University College	139
" " Victoria "	119
" " Trinity "	37
" " St. Michael's "	19
" " Faculty of Medicine	23
" " Faculty of Household Science	88
" " Occupational Therapy Course	23
" " Department of Public Health Nursing	6
" " Department of Social Service	1
" " School of Hygiene	1
Administrative staff	17

Women's Athletic Association

(*Miss A. E. M. Parkes, Secretary*)

The Women's Athletic Directorate reports another successful year. The Women's Athletic Association has two aims: 1. To encourage, through interfaculty competition, the participation in sports of all students who are physically fit. 2. To offer through intercollegiate meetings, which include the privileges of intercourse with students of other universities, the best possible competition for the outstanding athletes.

The activities of the association cover five sports: basketball, hockey, swimming, tennis and indoor baseball. During 1928-1929, nine interfaculty basketball teams were operated with junior University College as champions, and two intercollegiate teams with the University of Toronto as champions in the senior series; seven interfaculty hockey teams, with St. Hilda's as champions, and one intercollegiate team, with the University of Toronto as champions; four faculty and one interfaculty swimming meets were held, with University College as champions; five faculty and one interfaculty tennis tournaments were held, with St. Hilda's as champions; and four interfaculty baseball teams were operated with Victoria as champions.

Ontario College of Education

During the session 1928-1929 there were 118 women students enrolled in the physical training classes, and 240 class periods of instruction were given in the gymnasium.

The class was divided into two sections. Each was given forty-five minutes of instruction in practical gymnastics four days a week. Additional instruction in team games was given during the month of May.

The swimming instructor reports a creditable attendance and good results attained by the students attending the swimming classes.

(19) REPORT OF THE WARDEN OF HART HOUSE

(*J. B. Bickersteth, Esq., M.C., M.A.*)

General.

When Hart House was handed over to the University by the Massey Foundation in 1919 the question must have constantly been asked what use the undergraduates would make of the building. Ten years have now passed and it is possible to attempt some answer to that question. In the first place Hart House is used daily by undergraduates in their hundreds and on some days in their thousands. To such an extent is this true that the building, notwithstanding its immense size, is already too small. Secondly the life which goes on within its walls is peculiar. It might easily have been common place. That this is not so is the result of the invaluable work done during these early formative years by the undergraduates themselves, wisely and enthusiastically assisted by many faculty and graduate members. It is obvious that if the building is to be attractive those things which minister to the well-being of the body must receive careful attention. Good meals at moderate prices, adequate common rooms, athletic facilities of all kinds—these have their place in Hart House and rightly so. But they are not peculiar. They are to be found in many other universities. The peculiar features of Hart House are its music, its art, its library, its chapel, its parliamentary debates, its personal relationships and its spirit. These things cannot be weighed or measured, catalogued or defined. They render the life of the House unique, and it is about them that universities situated all over this continent and indeed in many parts of the world seek information. Three recent examples may be given. Last summer I visited the Cité Universitaire in Paris where practically all the nations of the world are building hostels for their own students. In the centre of the Cité is to be erected a building incorporating many of the ideas of Hart House. Last summer also I visited the various colleges of the University of London and was asked to prepare a report on the proposal to establish on the new central site a building for student life somewhat on the same basis as Hart House. Last fall I was asked to deliver an address at Madison on the occasion of the opening of the Memorial Union at the University of Wisconsin.

This year the total membership of Hart House stands at approximately 3,960 of which just over 3,000 are undergraduates, the balance being faculty and graduate members. As the manifold activities of Hart House develop there is a tendency on the part of persons who are not members to make use of the building. Measures are being devised by the Board of Stewards and Athletic Directorate to deal with this problem. The usual dances and other social functions took place during the winter. The dances alone were attended by 11,077 persons. This year for the first time the University of Toronto Employees Association held their annual dance in Hart House. Early in the fall it became evident that the freezing of the earth in the quadrangle had caused bulging in the buttress walls. Tie rods were therefore placed at intervals connecting these two walls, the ends of the rods being embedded in a concrete mat. This work was carried out by the Superintendent of Buildings and Grounds.

Great Hall.

During the year 1927-28 the total number of meals served in Hart House was 315,997. It is expected that the number will be approximately the same for the present year. Among formal dinners given were those in connection with the following organisations—the Maritime Provinces Association, the Empire Parliamentary Association, the English Public Schools Empire Tour, the Illuminating Engineering Society and the Board of Trade (dinner for Mr. Mackenzie King). Meals were served for the delegates of the Modern Language Association Convention at Christmas. In May, Mr. W. H. Campbell left Hart House to take up other work. Mr. Campbell had been Superintendent of the Great Hall for the past five years and by his organising ability and devotion to the welfare of all members of Hart House has rendered invaluable service. Mr. A. Gunn has been appointed as Superintendent in his place.

Library.

Valuable additions both by purchase and gift have been made to the library which continues to be crowded with undergraduates from morning to night. Steps have been taken to improve the ventilation of this room.

Music.

The continued support given to all the musical activities of Hart House and the obvious need for the co-ordination and development of the musical life of the university led the Music Committee and the Board of Stewards to forward a definite resolution to the Board of Governors recommending the appointment of a musical director for the university as a whole. One of the Sunday Evening Concert programmes was given by a well known pianist this being the first time an artist has come specially from New York for this purpose. The last Songster of the year was conducted by Dr. E. H. Fellowes of St. George's Chapel, Windsor, the eminent authority on Tudor music.

Sketch Room.

The exhibitions held in the Sketch Room and the Little Sketch Room have attracted a steadily increasing number of undergraduates. The annual exhibition of work by members of Hart House held in February was of particular interest. Last year mention was made that Professor G. M. Wrong had set aside a sum of $2,500 in memory of his son Harold, the interest from this sum to be used for the purchase of works of art for Hart House. Professor Wrong and his family have now increased this sum to $5,000 as a memorial to his two sons, Murray and Harold, the money to be used, as to income, for the purchase of pictures, or in any way which is calculated to stimulate and encourage the appreciation of art in Hart House. During the winter the Sketch Committee learnt that it would be possible to procure the last available large canvas by the late Tom Thomson. A special appeal for the Print Fund was made and met with a generous response. The proceeds of the Fancy Dress Ball were also devoted to this purpose and "The Pointers" is now the possession of Hart House. Two Tom Thomson sketches were purchased with the Harold Verschoyle Wrong Memorial Fund. These three pictures greatly add to the interest of the collection of Canadian pictures which it is the policy of Hart House gradually to build up. A portrait photograph of the late Hart A. Massey (1823-1896) has been presented to Hart House by the Hon. Vincent Massey and will always be regarded as an honoured possession.

Camera Committee.

In January the Camera Committee under the chairmanship of Professor A. F. Coventry arranged an exhibition of photographic prints which filled the large Sketch Room and was visited by hundreds of undergraduates and senior members. The Camera Committee has also undertaken the mounting and cataloguing of the many photographs of the exterior and interior of the building owned by Hart House.

Debates.

The first Order of Business at the debate on the 28th November was the unveiling of the Speaker's Chair presented to Hart House in memory of Maurice Cody by his parents. The Rev. Dr. Cody performed the ceremony and speeches were made from both sides of the House expressing appreciation of this gift as a fitting memorial of the outstanding services rendered by Maurice Cody to the cause of debating in the University and particularly in Hart House. The Attorney-General took part in the debate which followed, the resolution being a vote of confidence in His Majesty's Government in Ontario. Other debates held this year dealt with the modern press, the emancipation of women (Miss Agnes Macphail being Hon. Visitor) and the rising generation.

Student Christian Association.

The work of the Student Christian Association under the guidance of the Rev. F. J. Moore has gone steadily forward. The Wednesday afternoon lectures have been excellently attended. Groups have met regularly for study and discussion, and short daily services have been held at the noon hour in the Chapel.

Visitors.

Among the many visitors who have come to Hart House during the past year may be mentioned Lord Peel, Lord Thomson, Mr. David Kirkwood, Sir Hugh Macmillan, Sir Rennell Rodd, Mr. Paul Claudel, Sir Austen Chamberlain, M. Jean Knight, the Mayor of Montreal, Mr. C. F. Andrews, Mr. Bridges Adams, South African Students, Australian Students, Mr. Thornton Wilder, Mr. Leonard Woolley (excavator of Ur), Sir Archibald Strong (Australia), Sir Charles G. Robertson, Mr. Ernest Raymond, M. Oswald Mayrand (editor of "La Presse"), Mr. H. M. Richards and Sir Aubrey Symonds (both of the Board of Education, England), Sir Robert Donald and Mr. Norman Thomas (communist candidate for the Presidency of the U.S.A.).

Staff.

The daily administration of Hart House is now to a large extent in the hands of the Comptroller and Assistant Comptroller. Mr. Gilley and Mr. Cowan are called upon to deal with many and diverse problems and to their task they bring ability, enthusiasm and understanding. Mr. Wansbrough has done admirable work in a position which is of peculiar importance as it not only brings him into close touch with many undergraduates but also gives him the main responsibility for the senior membership of the House.

Committees.

One of the most valuable features of Hart House life is its committee system and year by year the elections held in Hart House during the first week in March grow in interest. The number of candidates for the various committees is impressive and electioneering is carried on in a spirit of good natured rivalry. This year for the first time a dinner for members of all Hart House committees was held at the end of October. About one hundred men were present at dinner in the Great Hall and later the party adjourned to the Music Room where Mr. Campbell McInnes sang folk songs. The minutes of the Board of Stewards and of the Standing and Special committees constitute the chief records of Hart House. These have now been bound for the first ten years and steps are being taken to ensure their preservation. Ten years are a short time when compared with the centuries which are to come. The committees of Hart House and the undergraduate body as a whole have built slowly and wisely during this first decade and it is for future generations of students to continue what has been well begun.

(2) REPORT OF THE DIRECTOR OF THE CONNAUGHT LABORATORIES

(*Dr. J. G. FitzGerald*)

This, the fifteenth annual report of the director of the Connaught Laboratories, is a brief review covering the period July 1st, 1928, to June 30th, 1929.

The total volume of work, both in research and routine productions, has exceeded that undertaken in any previous year since the establishment of these laboratories. The space and facilities made available in the new hygiene building have greatly aided in the prosecution of a number of investigations and have rendered feasible more satisfactory arrangments for routine undertakings.

In the previous report, reference was made to the problem of obtaining suitably trained personnel for research in the fields of infection and immunity. The solution of that problem does not seem probable in the near future. In common with other fundamental medical sciences—anatomy, physiology and biochemistry—bacteriology and immunology are at a disadvantage when in competition with the clinical branches of medicine in obtaining personnel. The still very meagre rewards attached to the more important posts in the laboratory branches of these sciences may very well, in the not distant future, be the occasion of serious difficulties.

The Connaught Laboratories serve a threefold function, research, teaching and medical public services. Enterprise and initiative in any one of these fields of endeavour are not sufficient equipment in those responsible for the present and future development of these laboratories. In consequence, obtaining suitable personnel is perhaps more difficult than is the case in university departments where research and teaching only are carried on. The growth and development of the Dominion of Canada is constantly reflected in the increased scope and diversity of work of these laboratories. Activities which aid even in a modest fashion in the solution of a variety of public health problems, occupy no small part of the time of the staff. The preparation and distribution of products constitute only a part of the public service work. On questions of infection and immunity, which cause concern to provincial and local health authorities, advice is often sought; and appeals for assistance are frequently made by medical practitioners and those interested in analogous problems in other fields, which, of course, when it is at all possible, is most willingly given. Evidence is not wanting to still further strengthen the view that the policy of simultaneously conducting educational work with the distribution of those biological products, which have markedly contributed to a reduction of preventable deaths and sickness, is bearing fruit. In several communities extraordinarily satisfactory results have accrued from the widespread use of diphtheria toxoid (anatoxine) in the control of diphtheria. In the province of Ontario, in the cities of Hamilton and Brantford in particular, the achievements in this direction have been little short of spectacular. The results obtained in these cities can of course, be duplicated in any community in the Dominion. The complete control of diphtheria, once a grave public health problem, is quite feasible when the public health authorities, the medical profession and the general public in any community set about to accomplish this in a really serious fashion.

Staff—The total number of persons on the whole time staff of the laboratories, as of June 30, 1929, is 121. This is an increase of 47 in the last three years. The administrative officers consist of the director, associate director, four assistant directors, comptroller and secretary. On the side of research and routine production, the personnel is essentially the same in so far as classification of personnel is concerned. During the year Dr. C. H. Best resigned as assistant director of the laboratories upon receiving the appointment of professor of physiology in this university. Dr. Best, during five years in which he served as an administrative officer, gave splendid service not only in the direction of the work of the insulin division but in the supervision of investigations in his own field. Fortunately, Dr. Best is to continue in the capacity of research member of the laboratories and will thus be in a position to utilise to the full the opportunities available for research in certain aspects of physiology and biochemistry in the Connaught Laboratories. During the present summer, Dr. P. J. Moloney will spend several months in study and observation in Europe. Dr. D. A. Scott was for a period of seven months during the current year engaged in research with Dr. C. R. Harington, University College, University of London. A number of changes have occurred through resignations and appointments during the year. These have been reported in detail to the Governors through the Connaught Laboratories Committee.

Research—Investigations in bacteriology, immunology, immunochemistry, physiology, biochemistry and filterable viruses have been prosecuted during the year. The work which for some three years has been carried on in bovine tuberculosis in conjunction with the National Research Council of Canada has been completed. Further work in this field is not contemplated at present. It is proposed however to extend, if possible, investigations, already initiated, of the acute respiratory infections. It is hoped to report further upon this phase of the work at a later time. Publications by members of the staff are shown in Appendix A.

Public Service—The present year has been the most active period since the opening of the laboratories in the volume of products distributed. A very considerable increase in the total volume of distribution over that of the previous year has been noted. The products distributed are: anti-anthrax serum, anti-meningococcic serum, anti-rabic vaccine, Dick test outfits, diphtheria antitoxin, diphtheria toxoid, insulin, liver extract, normal horse serum, parathyphoid vaccine, pertussis vaccine, pneumococcus (type I) serum, scarlet fever antitoxin, scarlet fever toxin, Schick test outfits, tetanus antitoxin, typhoid vaccine, vaccine virus. Liver extract which was last added to the list of products distributed has proved to be of very great value in the treatment of many cases of pernicious anaemia. Convalescent human measles serum for the specific prevention of measles has been distributed on a small scale through the co-operation of certain members of the staff of the department of paediatrics. Convalescent sera for the specific prevention of measles and the treatment of anterior poliomyelitis should be made available in every community. To achieve this at present necessitates the collaboration of healthy immune persons and their physicians. Serum institutes and public health laboratories are then able to prepare and distribute such sera and to safeguard their use. The countries in which products of the Connaught Laboratories have been distributed are: British West Indies (Barbados, Jamaica, St. Lucia, Trinidad) Dominion of Canada (all provinces), Ceylon, China, India, Irish Free State, Japan, Newfoundland, New Zealand, South Africa, Uruquay, Venezuela.

New Buildings at the University Farm—During the present year, three brick stables each accommodating twenty-six horses, a laboratory and operating building, and a two family house have been constructed at the farm. These splendid new buildings add greatly to the value of the plant available for the production of biological products and for the housing of personnel. The main building at the farm has also undergone complete alteration. The stable section has been entirely changed and converted into a series of laboratories for routine production. Other portions of the building have been converted into research laboratories. Additional living quarters have also been provided and the building in this present state makes it possible to carry on concentration of antitoxin and other routine procedures which hitherto had been conducted in the university section of the laboratories. This makes available space in the hygiene building which is very much needed for other purposes. Mr. M. D. Orr has taken up residence at the University Farm as assistant director in charge there.

Visitors from other countries, including Australia, Brazil, Bulgaria, China, France, Holland, India, Italy, Japan, Mexico, Spain and Sweden, have observed the work being carried on in the Connaught Laboratories during the present year.

The continued support and generous co-operation of the Connaught Laboratories Committee of the Governors, my administrative colleagues and the staff of the laboratories generally are deeply appreciated and are gratefully acknowledged.

(21) STATEMENT REGARDING THE MUSEUM OF ARCHAEOLOGY

(*Professor C. T. Currelly*)

The Carnegie Report on American Museums states that the Royal Ontario Museum of Archaeology is the most congested that the writer visited. This congestion has most seriously interfered with the general work of the museum: it has been a great handicap in the matter of securing support, and from the standpoint of the staff has made the work extremely difficult.

In the department of European prehistory, there has been a continued growth. A few very fine implements of the English Stone and Bronze Ages have been added; but the chief acquisition has been the Ami collection, consisting of approximately 1,000 important French pieces and about 250 very choice specimens from Algeria. The rearrangement and cataloguing have gone on steadily and are much nearer completion.

To the Egyptian and Babylonian collections very little has been added. The work of arrangement and mounting has gone on steadily.

In the department of classical antiquities a fine late 6th or early 5th century model of a chariot has been obtained, also three extremely fine Tanagras and a mask-head. The collection of classical coins has received many additions, and a good deal of work has been done in getting our large collection in good order. The main part of the time, however, has been spent on the two volumes of the classical vases, which are now in the printer's hands.

The growth of the Roman-British collection has been very satisfactory. A steady stream of vases, tools, leatherwork and coins has come in. These have been chiefly from excavations made in London. Particular mention may be made of a large collection of fragments of Samian ware that will give material for quite detailed study of the Roman designs in this type of pottery, a series of coins from the important hoard recently found at Weymouth Bay, and a large painting showing a reconstruction of London in the 4th century A.D.

The Anglo-Saxon collection has received a steady increase of small objects. The outstanding piece is a remarkable Viking sword that was dredged from the Thames. The hilt is inlaid with gold and silver of such amazing workmanship that some of our best jewellery workers are unable to determine how it was done.

Our most important additions have been in the department of arms and armour. These include a very fine Maximilian suit; a globose breastplate and leg pieces; an archer's pavois, which he propped in front of him in battle; two shields of the Venetian Guard; a particularly interesting cruciform sword with a prayer to the Blessed Virgin, counter-stamped with the mark of Mohammed II, conqueror of Constantinople, thus showing that it was captured from the Christians at the time of the great rush on Europe; a fine two-handed sword; a straight Gothic sword with wheel pommel; some chain mail; a very fine Italian cup-hilt rapier; one of the famous Landsknecht swords and two Landsknecht daggers; a hunting equipment; two battleaxes; two light tilting lances; a bronze hand-cannon of the 15th century; a salade; a steel skullcap; and a very important sword about which considerable has been written, said to be by the maker of the famous Borgia sword. A suit of Japanese armour has also been presented. The work of the catalogue has continued satisfactorily.

Numerous outstanding pieces have been added to the great Chinese collection. These have consisted of prehistoric bronze implements, early bronze vessels, a large number of beautiful bronze mirrors from the 1st to the 10th centuries, and early potteries. A considerable number of extremely important jades have also been received, part of the well-known Wu Ta-ch'êng collection. Everything else, however, has been completely overshadowed by the great wall-painting, about 450 square feet in area. This is one of the finest paintings of China, and when it can be displayed will be among our greatest treasures. It is a Buddhistic religious scene of the type copied later for Christian religious pictures.

To the textiles a very interesting batik has been added, and but little else.

The department of printing and the book has obtained a number of American prints, also a large and important collection of early French lithographs, a fine Dürer, a Faithorne, and a number of other good European prints. A start has been made towards a collection of modern illustration, an extensive series of the pen-and-ink originals of the comic strips having been presented through the newspapers. The postage stamp collection has been steadily growing.

Satisfactory progress has been made in the department of ceramics by the acquisition of a number of pieces, and the work of cataloguing has been continued.

The metalwork department has been presented with the J. Sutcliffe Smith collection of watches, consisting of over 200 watches and movements. The history of the watch during the last two centuries is very fully illustrated, with numerous examples of beautiful cases and unusual mechanism.

The furniture and woodwork department has received some excellent pieces, the most outstanding being a very fine, leather-covered Spanish Renaissance chest.

Valuable additions have been made to the ethnographical collection: several good pieces of Peruvian pottery, African ivory material, an Eskimo series, a collection of masks and other articles from British Columbia, and a continued, steady increase of Ontario prehistoric objects.

To give a complete list of gifts and donors would require far more than the space possible for this report.

The work of casing and mounting has gone on steadily. We have averaged 60 museum cases a year since the time of opening.

The work of instruction has continued. Miss Payne has had four classes a day, and Miss Home a considerable number. The teaching and the general work of the museum are very seriously hampered by our extraordinary congestion.

(22) STATEMENT REGARDING THE MUSEUM OF BIOLOGY

(*Professor B. A. Bensley*)

The most notable feature of the work of the museum during the past year has been the number of persons who have contributed to its collections. This is indicative of the extent to which the museum is interesting amateur naturalists and assisting them in their natural history work. Eighty-nine individuals and organisations have donated specimens to the collections during the past year. Some of the more important of these were as follows:—

Mr. Wallace Havelock Robb has continued to add to the collection of paintings of birds of Eastern Canada by Major Allan Brooks. During the year he donated a painting of the brown thrasher and through him Mr. J. E. Buker of Chicago donated paintings of the saw-whet owl and of the marsh hawk; Mr. J. H. Fleming, a collection of 78 skins of Alberta mammals, a number of mounted specimens of albino mammals and other miscellaneous material; Major L. S. Dear of Port Arthur, 2 golden eagles; W. L. Edmonds, 81 books and 83 maps; Abram H. Culp, R.R. No. 1, Beamsville, a net formerly used to take passenger pigeons by his grandfather, Samuel R. Culp of Vineland Station; Jack Miner, Kingsville, Ont., 13 specimens of birds, maps showing the migration routes of ducks and geese and an autographed copy of his book "Jack Miner and the Birds"; J. E. Thurston, Calgary Public Museum, 18 bird skins taken by his father in Toronto between 1890 and 1897; E. V. Rippon, Toronto, 8 books, 3 pamphlets and 124 parts of "Macrolepidopters of the World"; Dr. C. J. Currie, Toronto, 18 skins of birds collected in Africa by the late Rev. Walter T. Currie; Mr. John Townson, Toronto, 27 mounted birds and 1 mounted fish; Dr. W. E. Hurlburt, Vineland Station, Ont., a number of cage birds and two native birds; Miss Ann Johnston, Toronto, a mounted red fox taken about 1873 near Nordheimer estate, Toronto; specimens of whistling swans killed in going over Niagara

Falls were also received from the Ontario Department of Game and Fisheries and from the Niagara Parks Commission. Thirteen specimens were received from the Parks Department, City of Toronto, the most important of which was a young chimpanzee. A number of specimens of historical interest including a wild turkey, passenger pigeon and white egret were obtained by exchange from Alma College, St. Thomas.

Other donations were received from R. C. Baillie, Mrs. Benson, A. E. Allin, H. H. Brown, Prof. B. A. Bensley, A. Buchanan, R. D. Black Jr., Ronald Carter, C. S. Calvert, W. D. Christianson Jr., C. H. D. Clarke, John Douglas, R. G. Dingman, H. J. Dignan, E. J. Deacon, C. E. Edmonds, John Edmonds, D. Godfrey, Carlos A. Giraldo, C. Hope, Paul Hahn, Mrs. Harrison, J. L. Hart, Prof. W. J. K. Harkness, Dr. Paul Harrington, R. O. Hawtrey, A. D. Hember, Gordon Hinchcliffe, Mrs. J. A. McKenzie, MacLean Howard, Mrs. J. B. Jennings, Alex Jack, Thos. L. Jackson, A. Kay, G. W. Knechtel, T. B. Kurata, W. J. LeRay, J. W. Lethbridge, H. F. Lewis, R. V. Lindsay, G. M. Malone, Mrs. Geo. McCormack, R. J. McDowall, Peter MacKay, E. H. McLeod, Miss N. MacNeill, W. W. Mason, R. O. Merriman, L. J. Milne, Mrs. O. S. Mitchell, J. A. Munro, National Museum of Canada, S. J. Nichols, Owen Sound Collegiate Institute, Dr. R. B. Orr, R. Oxford, Mrs. A. Phillips, Mrs. Proctor, W. E. Ricker, J. Rickett, R. J. Rutter, Foster Smith, Dr. G. E. Smith, S. L. Thompson, W. E. Saunders, Allan Twining, A. R. Van, Mrs. Wahl, Mrs. Francis Williams, A. A. Wood, Mrs. Geo. A. Young, W. P. Young.

The following material was purchased:—a collection of insects, largely Lepidoptera from E. V. Rippon; five mounted African antelopes from G. L. Pop, a collection of 150 specimens of British Columbia birds from K. Racey, a small collection (46) of horned larks and starlings from A. A. Wood; skins of two Chinese badgers and one goral from W. N. Ferguson; a fulmar from Oliver Trafford, St. Eugene, Ont.; a mounted grey gyrfalcon, P. W. Tow, Victoria, B.C.; 209 skulls of Ontario mammals and 13 mammal skins from miscellaneous sources.

Expeditions sent out by the museum and the department resulted in the addition of 361 birds, 32 mammals, 53 reptiles, 112 amphibians and 505 fishes.

The collection of fishes now numbers 4,010 lots and individual specimens belonging to 286 species, 194 genera and 75 families. Additions to the pamphlet collection numbered 700.

(23) STATEMENT REGARDING THE MUSEUM OF GEOLOGY

(*Professor E. S. Moore*)

The collections of the museum of geology have been enriched during the past year by the addition of a number of important exhibits. A splendid model of one of the largest open pit asbestos mines in the Thetford district, Quebec has been prepared by Mr. Burgie who made the model of Niagara Falls now in the museum. A number of very large specimens of ore as well as numerous collections of smaller specimens have been donated by mining companies and other friends. The director wishes to express his sincere thanks to all these friends of the museum who have so generously contributed to its advancement.

The following exhibits have been received by donation:

A very large specimen of high grade copper-nickel ore from the Frood Mine, Sudbury district. The International Nickel Company.

Large specimens of nickel-copper ore and wall rocks from the Levack Mine, Sudbury district. Mr. F. J. Egar, Mond Nickel Company.

Gold ore from the McMillan Mine, Ontario. The McMillan Gold Mines, Ltd., Sudbury.

Large section of a vein of copper ore from the Cheney Mine, Ontario and specimen of lead-zinc-silver ore from the White River Lead Mine, Ontario. Mr. Joseph Travers, Sudbury Basin Mines, Ltd.

Collection of ores from the Sherritt-Gordon Mine, Manitoba. Mr. E. L. Brown.

Specimens from the Frood Mine, Sudbury district. Mr. A. D. Carmichael, Mond Nickel Company.

Gold ore and rocks from the Rand, South Africa. Mr. E. J. Lashinger per Dr. A. P. Coleman.

Section of a diabase dike in ore, Sudbury, Ontario. Mr. R. Coleman, Copper Cliff.

Molybdenite in pegmatite, Loon, Ontario. Mr. J. E. Thomson, University of Toronto.

Wire gold from International State Mines Corporation, Boulder, Colorado. Dr. John Oille.

Ores and rocks from the Mesabi Range, Minnesota. Mr. C. J. Calvin per Professor W. A. Parks.

Specimens of iron and lead-zinc ore from Great Slave Lake. Dr. F. G. Banting.

Silver ore from Gowganda, Ontario. Professor A. L. Parsons.

Copper-lead-zinc ore from Sudbury district. Professor A. MacLean.

Rock specimens from Kolar Gold Field, India. Mr. R. G. K. Morrison.

Materials for renovation of large collection of petroleum and its products, previously donated to museum. Imperial Oil Company.

Rock specimens from Peterborough, Ontario. Rev. H. B. Herrington.

Pentlandite from Creighton Mine. Mr. J B. McNab.

By collection:

Various ores from the Sudbury district and vicinity of the north shore of Lake Huron. By the director.

(24) STATEMENT REGARDING THE MUSEUM OF MINERALOGY

(*Professor T. L. Walker*)

During the past year the work of the museum has been conducted as in previous years. Much material has been collected by the staff, while in less degree the collections have been enriched by purchase from mine owners and mineral dealers, by exchange with collectors and public institutions in many parts of the world, and by important presentations by a few generous friends of the museum.

In the exhibition gallery an exhibit has been arranged to show the selective action of ultraviolet light on minerals. This exhibit when fully developed should prove of great interest to visitors.

On recommendation by the directors of this museum, the Board of Trustees of the Royal Ontario Museum has made the following appointments:

Life Fellow: The Hon. Senator M. J. O'Brien, Joseph Errington, Esq.; Life Member: J. L. Agnew, Esq., Dr. J. Mackintosh Bell, J. E. Birks, Esq., A. F. Brigham, Esq., J. G. Dickenson, Esq., H. L. Kerr, Esq., E. G. Montgomery, Esq.

The staff of the museum is glad to acknowledge in this way the generous assistance which these and other gentlemen have in time past rendered to the museum.

(25) STATEMENT REGARDING THE MUSEUM OF PALAEONTOLOGY

(*Professor W. A. Parks*)

The collections have been increased during the year by the addition of the average number of invertebrate fossils. The vertebrates mounted and placed in the gallery are as follows: complete skeleton of the dinosaur *Chasmosaurus belli;* the forepart of a skeleton, including the most perfect head ever found, of the birdlike dinosaur *Struthiomimus samueli,* described by the director as a new species; a large slab covered with the remains of the pairedhorned rhinoceros *Diceratherium cooki;* a complete skeleton of the creodent *Hyaenodon nebrascensis;* numerous heads and partial skeletons of titanotheres, rodents, oreodonts, camels, carnivores, insectivores, turtles, and horses—about 75 specimens in all, obtained by the University expedition to Wyoming and Nebraska in 1928.

The generic sets of crinoids and cystids have been increased by a number of rare forms and the arrangement of duplicate material for exchange has been practically completed by Dr. Fritz.

The gallery is becoming congested; unless additional space is provided very soon, it is difficult to see how the ever-increasing collections can be accommodated.

The more important acquisitions during the year are as follows:

By donation;

Cretaceous fossils from Southern Alberta—Dr. W. S. Dyer, Toronto.

Microscopic slides of Bryozoa—Mr. R. R. Hibbard, Buffalo, N.Y.

Marine shells, fossils, etc.—Mrs. Emma Maybee, 345 High Park Ave., Toronto.

Interglacial wood from Toronto—Mr. A. A. Outram, 101 Wright Ave., Toronto.

By exchange;

Interglacial shells from Illinois—Professor Frank C. Baker, University of Illinois.

Bryozoa from Ohio, Indiana, etc.—Mr. R. R. Hibbard, Buffalo, N.Y.

By collection;

Large series of vertebrate fossils from the tertiary of Wyoming and Nebraska—University Expedition.

Ordovician fossils from Manitoulin Island—The director.

Miscellaneous fossils, rocks, and ores from the Western States—The director.

By purchase;

Cretaceous and tertiary fossils from California—Charles Sternberg, San Diego, Cal.

Trilobites and brachiopods (selected)—Ward's Natural Science Establishment, Rochester, N.Y.

Collection of crinoids—Ward's Natural Science Establishment, Rochester, N.Y.

Large slabs with triassic fossils—Percy Train, Rochester, Nevada.

APPENDIX B

(1) Enrolment in Colleges.
(2) Enrolment in University subjects.
(3) Registration in Courses in the Faculty of Arts.
(4) Registration for Graduate Courses.

(1) ENROLMENT IN THE COLLEGES

The students in University College were enrolled as follows:

	Greek	Latin	Ancient History	English	German	Scientific German	French	French C. and F.	Orientals			Ethics
									Hebrew	Lit.	History	
First Year—												
Pass	10	233	53	255	9	50	164	32	26	113		
Honours	10	42	51	135	20		80					2
Commerce & Finance												
Second Year—												
Pass	11	50	10	221	12	25	188	17	13	69	24	45
Honours	6	32	10	79	12		42		4		6	7
Commerce & Finance												
Third Year—												
Pass	4	20	8	118	10		76	18	7	37	13	42
Honours	11	12	37	28	8		16					5
Commerce & Finance												
Fourth Year—												
Pass	4	10	8	98	7		70	24	4	53	5	23
Honours	5	8	6	20	15		26					12
Commerce & Finance												
Totals—												
Pass	29	313	79	692	38	75	498	91	50	272	37	110
Honours	32	94	104	262	55		164		4		11	26
Commerce & Finance												

NOTE—

In addition, these departments of the College provided instruction to students enrolled in other Faculties than Arts and in the Teachers' Courses: German 129; French 297; Ethics 100.

The students in Victoria College were enrolled as follows:

	Greek	Latin	Ancient History	English	German	Scientific German	French	Orientals	Ethics	Rel. Know.
First Year—										
Pass	2	43	20	69	5	..	52	15	..	70
Honours	5	37	38	68	20	29	64	..	5	..
Commerce & Finance	..	..	..	..	..	..	10	..	..	..
Second Year—										
Pass	4	31	7	135	6	..	115	13	28	99
Honours	5	25	8	53	7	26	38	1	6	..
Commerce & Finance	..	..	..	..	..	..	7	..	..	..
Third Year—										
Pass	3	19	5	107	7	..	60	3	38	73
Honours	4	8	4	20	9	..	14	1	9	..
Commerce & Finance	..	..	..	..	..	..	2	..	..	..
Fourth Year—										
Pass	1	3	1	63	3	..	31	..	14	66
Honours	7	8	7	16	3	..	12	..	7	..
Commerce & Finance	..	..	..	..	..	..	7	..	..	..
Totals—										
Pass	10	96	33	374	21	..	258	31	80	308
Honours	21	78	57	157	29	55	128	2	27	..
Commerce & Finance	..	..	..	..	..	..	26	..	..	..

The students in Trinity College were enrolled as follows:

	Greek	Latin	Ancient History	English	German	French	Orientals	Ethics	Anc. Or. Hist.
First Year—									
Pass	..	52	..	61	18	50	..	..	..
Honours	4	8	8	11	3	12	..	..	..
Commerce & Finance	..	..	..	..	..	8	..	..	..
Second Year—									
Pass	1	33	..	43	7	49	2	6	2
Honours	2	6	2	11	5	11	1	1	1
Commerce & Finance	..	..	..	..	..	2	..	..	..
Third Year—									
Pass	2	2	1	30	..	27	1	20	1
Honours	3	5	3	7	1	2	..	1	..
Commerce & Finance	..	..	..	..	..	2	..	..	..
Fourth Year—									
Pass	..	10	..	17	..	16	1	16	1
Honours	..	..	..	6	..	1	1	..	1
Commerce & Finance	..	..	..	..	..	1	..	..	..
Totals—									
Pass	3	97	1	151	25	142	4	42	4
Honours	9	19	13	35	9	26	2	2	2
Commerce & Finance	..	..	..	..	..	13	..	..	..

The students in St. Michael's College were enrolled as follows:

	Greek	Latin	Ancient History	English	German	French	Philosophy	Ethics
First Year—								
Pass	11	78	4	77	8	72		
Honours	4	10	10	11	4	13	1	
Second Year—								
Pass	3	48		59		50	28	
Honours		6		11	3	11	9	
Third Year—								
Pass		25		34		24	27	11
Honours	2	2	2	5	1	5	6	6
Fourth Year—								
Pass	2	14		24		21	11	5
Honours		3		3	1	6	4	4
Totals—								
Pass	16	165	4	194	8	167	66	16
Honours	6	21	12	30	9	35	30	10

(2) ENROLMENT IN UNIVERSITY SUBJECTS

The following tables exhibit the numbers attending lectures in University subjects, together with the number of those taking the practical work in the laboratories:

DEPARTMENT OF MATHEMATICS

	Pass	Pass and Honours	Honours
Faculty of Arts—			
First Year	460	143	62
Second Year	76	77	34
Third Year	67	15	20
Fourth Year	51	5	13
Faculty of Medicine—			
First Year	24	...	...
Second Year	1	...	...
Third Year	2	...	...
Faculty of Applied Science and Engineering—			
First Year	...	204	...
Second Year	...	127	...
Third Year	...	6	...
Totals	681	577	129

DEPARTMENT OF PHYSICS

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	456	..	135	135
Second Year	24	..	80	99
Third Year	17	..	25	37
Fourth Year	6	..	19	21
Teachers' Courses	..	..	15	15
Faculty of Medicine—				
First Year	..	105	..	105
Second Year	..	11	..	11
Third Year	..	22	..	22
Fourth Year	..	..	..	..
Faculty of Forestry—				
First Year	22	..	..	22
Faculty of Household Science—				
First Year	..	..	11	11
Faculty of Dentistry—				
First Year	..	23	..	23
College of Optometry—				
First Year	11	..	..	11
Public Health Nursing—				
First Year	8	..	..	8
Refresher Course—	..	..	18	18
School of Graduate Studies—	..	..	32	21
Totals	544	161	335	559

DEPARTMENT OF BIOLOGY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	456	..	73	73
Second Year	74	..	71	145
Third Year	30	..	7	37
Fourth Year	39	..	15	42
Department of University Extension	8	..	..	8
Faculty of Medicine—				
First Year	..	93	..	93
Second Year	..	70	..	..
Third Year	..	50	..	29
Faculty of Dentistry—				
First Year	..	23	..	23
Faculty of Applied Science and Engineering—				
Fourth Year	..	..	..	..
Faculty of Forestry—				
First Year	..	22	..	22
Fourth Year	..	9	..	8
Faculty of Household Science—				
First Year	..	..	12	12
Second Year	32	..	7	37
School of Graduate Studies	..	..	..	35
Ontario Agricultural College—				
Second and Intermediate Years	..	52	..	52
Third Year	..	25	..	25
Second Year Macdonald Institute	..	71	..	71
College of Optometry		11	..	11
Department of Public Health Nursing	..	9	..	9
Totals	639	435	185	733

DEPARTMENT OF BOTANY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	456	..	79	79
Second Year	33	..	37	70
Third Year	32	..	3	35
Fourth Year	28	..	3	31
Faculty of Applied Science and Engineering	..	40	..	40
Faculty of Forestry—				
First Year	..	18	..	18
Fourth Year	..	10	..	10
Ontario College of Pharmacy				
First Year	119	..	..	119
Second Year	104	..	..	104
Faculty of Household Science—				
First Year	..	..	11	11
Second Year	31	..	7	38
Third Year	30	..	..	30
School of Graduate Studies	..	..	30	23
Teachers' Course (Hamilton)	12	..	..	12
Totals	845	68	170	620

DEPARTMENT OF CHEMISTRY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	456	..	129	129
Second Year	33	..	77	110
Third Year	63	..	8	12
Fourth Year	6	..	11	17
Faculty of Medicine—				
First Year	..	99	..	99
Second Year	..	108	..	108
Faculty of Applied Science and Engineering—				
First Year	..	44	..	44
Second Year	..	44	..	44
Third Year	..	83	..	83
Fourth Year	..	7	..	7
Faculty of Dentistry—				
First Year	..	23	..	23
Second Year	..	28	..	28
Third Year	..	56	..	56
Faculty of Forestry—				
First Year	22	..	..	22
Second Year	22	..	..	..
Faculty of Household Science—				
First Year	..	..	5	5
Second Year	21	..	6	27
Ontario College of Pharmacy—				
First Year	119	..	..	119
Second Year	105	..	..	105
Department of Public Health Nursing	9	..	..	9
School of Graduate Studies	..	..	31	12
Totals	856	492	267	1059

DEPARTMENT OF GEOLOGY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
First Year	456	..	185	..
Second Year	..	..	12	12
Third Year	10	..	2	8
Fourth Year	13	..	3	16
Faculty of Applied Science and Engineering—				
Second Year	..	41	..	3
Third Year	..	36	..	16
Fourth Year	..	13	..	13
Faculty of Forestry—				
Second Year	..	6	..	..
Third Year	..	12	..	12
School of Graduate Studies	..	..	10	10
Occassional	..	..	1	1
Totals	479	108	213	91

DEPARTMENT OF MINERALOGY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
Second Year	17	..	7	24
Third Year	3	..	6	4
Fourth Year	..	..	4	4
Teachers' Course	90	..	..	90
Faculty of Applied Science and Engineering—				
First Year	..	87	..	87
Second Year	..	39	..	39
Third Year	..	18	..	18
Fourth Year	..	5	..	5
Faculty of Forestry—				
Second Year	..	22	..	22
School of Graduate Studies	..	..	10	10
Totals	110	171	27	303

DEPARTMENT OF PHILOSOPHY

	Pass	Honours
Faculty of Arts—		
First Year	..	8
Second Year	81	22
Third Year	164	16
Fourth Year	83	18
School of Graduate Studies	..	48
Department of Social Service—		
First Year	23	..
Second Year	14	..
Department of University Extension	64	..
Totals	429	112

DEPARTMENT OF PSYCHOLOGY

	Pass	Pass and Honours	Honours	Laboratory
Faculty of Arts—				
Second Year	124	37	18	4
Third Year	57	6	13	94
Fourth Year	55	4	19	15
Faculty of Medicine—				
Second Year	54	..	..	..
Third Year	147	..	..	36
Fourth Year	30	..	..	..
Dept. of Social Service—				
First Year	23	..	..	..
Second Year	13	..	..	..
Dept. of Public Health Nursing	363	..	..	..
Department of University Extension—				
First Year	36	..	..	..
Second Year	16	..	..	..
School of Graduate Studies	..	..	28	20
Occasional Students	35	..	..	..
Totals	953	47	78	169

DEPARTMENT OF POLITICAL SCIENCE

	Pass	Honours
Faculty of Arts—		
First Year	..	155
Second Year	112	160
Third Year	96	93
Fourth Year	65	107
Faculty of Applied Science and Engineering—		
Second Year	160	..
Faculty of Forestry—		
Second Year	12	..
Third Year	12	..
Faculty of Household Science—		
Second Year	9	..
School of Graduate Studies	..	20
Department of University Extension	255	..
Department of Social Service—		
First Year	21	..
Second Year	11	..
Occasional Students	5	..
Totals	758	535

DEPARTMENT OF MODERN HISTORY

	Pass	Honours
Faculty of Arts—		
First Year	62	97
Second Year	115	78
Third Year	116	59
Fourth Year	73	47
Department of University Extension	209	..
School of Graduate Studies	..	13
Totals	575	294

DEPARTMENT OF ITALIAN AND SPANISH

	Italian		Spanish	
	Pass	Honours	Pass	Honours
Faculty of Arts—				
First Year	8	2	93	30
Second Year	2	5	38	25
Third Year	3	2	24	15
Fourth Year	4	1	17	14
School of Graduate Studies*	..	3	..	1
Totals	17	13	172	85

*Methods of Research, Bibliography 10.

DEPARTMENT OF HOUSEHOLD SCIENCE

	Pass	Honours
Faculty of Arts—		
First Year	..	33
Second Year	..	27
Third Year	11	26
Fourth Year	10	27
Faculty of Household Science—		
First Year	44	11
Second Year	35	7
Third Year	33	5
Fourth Year	26	4
Occasional student	1	..
School of Graduate Studies	..	6
Department of Public Health Nursing	24	..
Totals	184	146

(3) REGISTRATION IN COURSES IN THE FACULTY OF ARTS

Courses	First Year				Second Year				Third Year				Fourth Year				
	U C	V C	T C	M C	U C	V C	T C	M C	U C	V C	T C	M C	U C	V C	T C	M C	Totals
Pass	217	54	54	80	157	81	48	51	108	97	33	32	100	58	18	22	1,210
Classics	4	5	4	4	6	5	2	..	8	4	3	2	6	7	..	..	60
Oriental Languages	..	..	..	..	3	..	1	..	..	1	..	..	..	..	1	..	6
Hebrew and Ancient History	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	2
French, Greek and Latin	2	2	..	2	2	3	..	1	1	2	..	..	1	1	..	2	19
Modern Languages	31	25	6	8	19	14	7	6	16	13	2	5	19	12	1	4	188
English and History	32	26	3	3	18	20	4	5	13	16	2	4	8	11	4	2	171
Modern History	2	4	1	..	10	14	2	..	9	7	5	..	9	5	3	..	71
Political Science	13	1	3	..	27	12	5	1	15	12	2	1	9	9	3	..	113
Philosophy	..	..	1	..	8	7	1	8	2	8	1	5	6	3	2	4	56
Philosophy (English or History Option)	2	5	..	1	1	5	..	..	2	1	..	1	4	3	..	..	25
Psychology	..	..	..	..	3	1	..	..	1	..	..	..	..	..	..	..	5
Mathematics	4	2	1	1	2	4	..	..	2	2	..	..	5	1	..	..	24
Mathematics and Physics	18	11	2	3	10	14	2	..	8	8	..	..	8	2	3	..	89
Physics and Chemistry	1	..	1	..	1	..	..	..	..	..	..	..	1	..	..	..	4
Physics and Geology	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	1
Natural and Physical Sciences	23	14	5	2	..	..	..	..	..	..	..	..	..	..	..	..	44
Physics	..	..	..	..	1	..	..	..	1	1	..	..	..	..	..	..	3
Biology	..	..	..	..	4	3	1	..	..	2	..	..	3	..	..	..	13
Physiology and Biochemistry	..	..	..	..	3	3	..	..	3	..	..	..	..	..	..	..	9
Biological and Medical Sciences	..	..	..	..	12	11	2	..	13	3	2	..	12	12	1	..	68
Chemistry	..	..	..	..	3	1	1	..	3	..	..	..	1	1	..	..	10
Chemistry, Mineralogy and Geology	..	..	..	..	2	..	..	..	..	1	..	..	8	1	1	..	13
Geology and Mineralogy	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	3
Science (General)	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	1
Household Economics	17	15	..	1	16	11	1	..	18	6	2	..	10	13	3	1	114
Commerce and Finance (B.Comm.)	93	25	15	1	38	19	6	1	27	4	4	..	30	9	1	1	274
Registered twice	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	2
Totals	459	189	96	106	345	229	83	73	251	188	57	50	242	149	41	36	2,594

(4) REGISTRATION FOR GRADUATE COURSES

	Ph.D.	M.A.	Ch.M.	M.A.Sc.	M.Arch.	C.E.	M.E.	E.E.	D.Paed.	M.S.A.	Grad.
Dept. of Anthropology	..	..	..	..	..	..	..	..	..	..	1
" " Architecture	..	..	..	..	1	..	..	..	..	..	..
" " Biochemistry	2	3	..	..	..	..	..	..	..	..	..
" " Biology	8	2	..	..	..	..	..	..	..	3	8
" " Botany	12	5	..	..	..	..	..	..	..	2	4
" " Chemical Engineering	..	..	..	4	..	..	..	..	..	..	..
" " Civil Engineering	..	..	..	..	..	3	..	..	..	..	..
" " Chemistry	7	7	..	..	..	..	..	..	..	5	1
" " Classics	2	2	..	..	..	..	..	..	..	..	5
" " Educational Theory	..	1	..	..	..	..	..	..	..	..	1
" " Electrical Engineering	..	..	..	1	..	..	..	2	..	..	..
" " English	1	12	..	..	..	..	..	..	..	..	14
" " Epidem. & Biometries	..	1	..	..	..	..	..	..	..	..	..
" " Food Chemistry	..	3	..	..	..	..	..	..	..	..	1
" " Forestry	..	1	..	..	..	..	..	..	..	..	..
" " Geology & Palaeontology	7	3	..	..	..	..	..	..	..	..	1
" " German	2	2	..	..	..	..	..	..	..	..	1
" " History	3	7	..	..	..	..	..	..	..	..	2
" " Household Science	..	6	..	..	..	..	..	..	..	..	..
" " Hygiene and Prev. Med	2	..	..	..	..	..	..	..	..	..	..
" " Mathematics	3	4	..	..	..	..	..	..	..	..	1
" " Mechanical Engineering	..	..	..	1	..	..	1	..	..	..	..
" " Medicine	..	..	1	..	..	..	..	..	..	..	..
" " Mineralogy	1	1	..	..	..	..	..	..	..	..	1
" " Mining Engineering	..	..	..	1	..	..	..	..	..	..	..
" " Pathology and Bacteriology	2	..	..	..	..	..	..	..	..	..	..
" " Pathological Chemistry	2	1	..	..	..	..	..	..	..	..	..
" " Pedagogy	..	..	..	..	..	..	..	..	62	..	..
" " Pharmacology	..	1	..	..	..	..	..	..	..	..	..
" " Philosophy	3	25	..	..	..	..	..	..	..	..	27
" " Physics	15	6	..	..	..	..	..	..	..	..	2
" " Physiology	2	5	..	..	..	..	..	..	..	..	..
" " Physiol. Hygiene	..	2	..	..	..	..	..	..	..	..	..
" " Political Science	2	7	..	..	..	..	..	..	..	4	8
" " Psychology	..	9	..	..	..	..	..	..	..	..	18
" " Romance Languages	1	13	..	..	..	..	..	..	..	..	9
" " Semitics	2	3	..	..	..	..	..	..	..	..	2
" " Zymology	..	4	..	..	..	..	..	..	..	..	..
Totals	80	136	1	7	1	3	1	2	62	14	107

APPENDIX C

RESULTS OF EXAMINATIONS

(1) Faculty of Arts.
(2) Faculty of Medicine.
(3) Faculty of Applied Science and Engineering.
(4) Faculty of Household Science.
(5) Ontario College of Education.
(6) Faculty of Forestry.
(7) Faculty of Music.
(8) Faculty of Dentistry.
(9) Departments.

(1) Faculty of Arts

First Year

	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Starred	Failed	Transferred	Aegrotat	Deferred	Debarred
Pass	..	181	48	51	72	352	138	106	108	..	2	..	53
Supplementals	..	53	20	12	19	104	73	31	..	..	..	..	2
Classics	..	5	5	4	4	18	18	..	..	..	1	..	..
French, Greek and Latin	..	2	1	..	2	5	3	2	..	3	..	..	..
English and History	..	29	25	3	3	60	46	13	1	9	5	..	..
Modern Languages	..	31	22	6	8	67	63	3	1	7	..	..	3
Modern History and Political Science	..	15	5	4	..	24	20	4	..	5	..	..	..
Philosophy	..	..	..	1	..	1	1	..	..	..	..	..	..
Philosophy (English or Hist. Option)	..	1	5	..	1	7	6	1	..	2	..	..	1
Mathematics	..	4	1	1	..	6	4	1	1	2	..	..	..
Mathematics and Physics	..	19	11	3	3	36	33	2	1	9	2	..	..
Natural and Physical Sciences	..	23	15	4	3	45	36	8	1	9	1	..	3
Household Economics	..	20	13	..	..	33	31	2	..	3	..	..	..
Commerce and Finance	..	89	23	15	1	128	89	38	1	30	2	2	..
Occasional Students	..	7	1	..	1	9	6	..	3	..	..	..	..
Totals	..	479	195	104	117	895	567	211	117	79	13	2	62

Second Year

	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Starred	Failed	Transferred	Aegrotat	Deferred	Debarred
Pass	..	148	77	48	51	324	182	66	76	..	2	..	20
Supplementals	..	32	22	8	7	69	40	29	..	..	..	..	2
Classics	..	5	5	2	..	12	10	2	..	3	..	..	..
Oriental Languages	..	3	..	1	..	4	4	..	..	..	..	..	..
Hebrew and Ancient History	..	1	1	..	..	2	1	1	..	..	..	..	..
French, Greek and Latin	..	2	4	..	1	7	7	..	..	1	1	..	..
English and History	..	18	19	4	4	45	43	2	..	3	2	..	..
Modern Languages	..	19	12	8	6	45	44	1	..	1	..	..	..
Modern History	..	10	12	2	..	24	16	8	..	1	1	..	..
Political Science	..	24	12	4	1	41	30	7	4	10	..	..	..
Philosophy	..	6	7	1	8	22	16	5	I	..	2	..	1
Philosophy, English or History	..	1	4	..	..	5	4	1	..	1	..	..	..
Mathematics	..	2	4	..	..	6	3	1	2	..	..	..	..
Mathematics and Physics	..	10	13	1	..	24	13	5	6	2	..	..	..
Physics and Chemistry	..	1	..	..	..	1	1	..	..	..	..	..	..
Psychology	..	3	1	..	..	4	3	1	..	..	..	..	..
Physics	..	1	..	..	..	1	..	1	..	..	..	..	..
Biology	..	4	3	1	..	8	5	1	2	..	..	..	..
Physiology and Biochemistry and Biological and Medical Sciences	..	14	14	2	..	30	16	9	5	2	..	2	1
Chemistry	..	3	1	1	..	5	3	1	1	..	..	1	..
Chemistry, Mineralogy and Geology	..	2	..	..	..	2	1	..	1	..	..	..	..
Household Economics	..	15	11	1	..	27	17	10	..	..	..	..	..
Commerce and Finance	..	36	18	6	1	61	52	5	4	18	2	..	1
Occasional Students	1	4	1	1	..	7	7	..	..	..	..	..	..
Registered twice	..	2	..	..	..	2	1	1	..	..	..	..	..
Totals	1	362	241	91	79	774	517	155	102	42	10	3	25

Third Year

	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Starred	Failed	Transferred	Aegrotat	Deferred	Debarred
Pass	..	103	95	33	31	262	178	51	33	..	14	..	23
Supplementals	..	12	12	1	7	32	26	6	..	..	2	..	..
Classics	..	7	4	3	2	16	14	2	..	1	1	..	..
Oriental Languages	..	..	1	..	..	1	1	..	..	..	..	..	..
French, Greek and Latin	..	1	2	..	..	3	3	..	..	..	..	..	..
English and History	..	12	16	2	4	34	34	..	..	2	..	..	..
Modern Languages	..	14	11	2	4	31	30	1	..	1	..	..	..
Modern History	..	10	7	5	..	22	21	1	..	2	2	..	..
Political Science (Economics)	..	8	5	2	1	16	16	..	..	3	..	..	..
Political Science (Politics and Law)	..	6	5	..	..	11	11	..	..	..	1	..	..
Philosophy	..	2	8	1	6	17	16	1	..	..	..	..	..
Philosophy English or History	..	2	1	..	..	3	3	..	..	..	..	..	..
Mathematics	..	2	2	..	..	4	4	..	..	..	..	..	1
Mathematics and Physics	..	8	8	..	..	16	15	..	1	..	..	..	..
Physics and Geology	..	..	..	1	..	1	1	..	..	..	..	..	..
Psychology	..	1	..	..	..	1	1	..	..	..	..	..	..
Physics	..	1	1	..	..	2	2	..	..	..	..	..	..
Biology	..	..	2	..	..	2	2	..	..	..	..	..	..
Physiology and Biochemistry	..	3	..	..	..	3	2	1	..	..	..	..	..
Biological and Medical Sciences	..	13	3	2	..	18	17	1	..	1	..	..	..
Chemistry	..	2	..	..	..	2	2	..	..	..	..	..	..
Chemistry, Mineralogy and Geology I	..	..	1	..	..	1	1	..	..	..	..	..	..
Science (General)	..	1	..	..	..	1	1	..	..	..	..	..	..
Household Economics	..	17	6	2	..	25	23	2	..	1	..	..	2
Commerce and Finance	..	27	3	4	..	34	23	11	..	..	1	..	..
Occasionals	4	2	1	..	..	7	7	..	..	..	..	..	..
Totals	4	254	194	58	55	565	454	77	34	10	22	..	26

Fourth Year

	University of Toronto	Univ. Coll.	Vic. Coll.	Trin. Coll.	St. M. Coll.	TOTALS	Passed	Starred	Failed	Aegrotat	Pass Degree
Pass	..	99	56	18	21	194	168	12	14	2	..
Supplementals	..	4	..	1	1	6	3	3	..	..	..
Classics	..	6	7	1	..	14	14	..	..	..	1
Greek and Hebrew	..	..	..	..	..	..	..	..	..	..	..
French, Greek and Latin	..	1	1	..	2	4	3	1	..	..	..
English and History	..	8	11	4	2	25	25	..	..	..	..
Modern Languages	..	19	12	1	4	36	36	..	..	..	1
Modern History	..	8	5	3	..	16	16	..	..	..	..
Political Science I (Economics)	..	4	6	2	..	12	12	..	..	..	..
Political Science II (Politics and Law)	..	6	3	..	..	9	9	..	..	..	..
Philosophy	..	7	3	2	4	16	15	1	..	..	..
Philosophy, English or History	..	3	3	..	..	6	6	..	..	..	..
Mathematics	..	5	1	..	..	6	6	..	..	..	..
Mathematics and Physics I	..	4	2	1	..	7	7	..	..	..	1
Mathematics and Physics II	..	3	..	1	..	4	4	..	..	..	..
Mathematics and Physics III	..	1	..	1	..	2	2	..	..	..	..
Physics and Chemistry	..	1	..	..	..	1	1	..	..	..	..
Biology	..	3	..	..	..	3	3	..	..	..	..
Biological and Medical Sciences	..	12	12	1	..	25	25	..	..	1	..
Chemistry	..	1	1	..	..	2	2	..	..	..	..
Chemistry, Mineralogy and Geology I	..	8	1	1	..	10	10	..	..	..	..
Chemistry, Mineralogy and Geology II	..	..	..	..	..	..	..	..	..	..	..
Geology and Mineralogy	..	2	1	..	..	3	3	..	..	..	..
Household Economics	..	10	12	3	1	26	26	..	..	..	..
Commerce and Finance	..	30	10	1	1	42	39	3	..	1	..
Occasionals	2	1	..	..	..	3	3	..	..	..	..
Totals	2	246	147	41	36	472	438	20	14	4	3

TEACHERS' CLASSES

All Years

	Passed	Starred	Total
May Examination	190	80	270
September Examination	150	47	197
	340	127	467
Duplicates			99
Totals			368

(2) FACULTY OF MEDICINE

	Passed	Starred	Failed
First Year	64	19	7
Second Year	87	21	1
Third Year	97	23	1
Fourth Year	110	17	6
Fifth Year	100	7	2
Sixth Year	101	2	1
Diploma in Public Health	9	..	..
B.Sc. (Med.)	5	..	..
Totals	573	89	18

(3) FACULTY OF APPLIED SCIENCE AND ENGINEERING

	Passed with Honours	Passed	Starred	Failed
First Year—				
Civil Engineering	2	13	6	6
Mining Engineering	5	22	13	9
Mechanical Engineering	4	26	18	5
Architecture	2	7	5	4
Chemical Engineering	7	21	11	13
Electrical Engineering	4	30	17	8
Metallurgical Engineering	..	4	2	..
Second Year—				
Civil Engineering	1	11	6	4
Mining Engineering	2	16	5	4
Mechanical Engineering	4	20	14	6
Architecture	..	10	4	..
Chemical Engineering	9	27	13	2
Electrical Engineering	10	26	13	4
Metallurgical Engineering	1	2	1	..
Third Year—				
Civil Engineering	2	13	9	1
Mining Engineering	3	11	5	..
Mechanical Engineering	5	15	3	3
Architecture	1	5	1	..
Chemical Engineering	10	15	10	4
Electrical Engineering	9	18	11	3
Metallurgical Engineering	..	6	2	1
Fourth Year—				
Civil Engineering	4	9	1	..
Mining Engineering	3	5	2	..
Mechanical Engineering	6	15	1	1
Architecture	6	6	2	..
Chemical Engineering	5	12	1	..
Electrical Engineering	5	15	5	1
Metallurgical Engineering	..	6	3	..
Totals	110	378	193	80

(4) FACULTY OF HOUSEHOLD SCIENCE

	Passed	Starred	Transferred to Pass Course	Failed
First Year	41	7	1	9
Second Year	36	14	..	3
Third Year	37	9	..	..
Fourth Year	29	2	..	1
Totals	143	32	1	13

(5) ONTARIO COLLEGE OF EDUCATION

	Passed	Failed
*High School Assistants' Course	293	..
Specialists' Courses	146	..
First Class Public School Course	32	..
Elementary Art Course	45	..
Elementary Physical Education Course	164	..
One Year Household Science Course	6	..
Librarians' Course	32	..
Bachelor of Pedagogy Course	25	..
Bachelor of Pedagogy Course (passed in part)	76	..
Number who failed in whole or part	..	39
Totals	819	39

*Many of these are included among those who passed or failed in the other courses in this list.

(6) FACULTY OF FORESTRY

	Honours	Starred	Failed
First Year	14	2	6
Second Year	13	4	5
Third Year	9	2	1
Fourth Year	9	..	1
Totals	45	8	13

(7) FACULTY OF MUSIC

	Passed	Starred	Failed
First Year	5	5	4
Second Year	4	1	2
Third Year	2	1	3
Doctor of Music	..	..	1
Totals	11	7	10

(8) FACULTY OF DENTISTRY

	Passed	Starred	Failed
First Year	17	6	..
Supplementals, student not in attendance	1	1	..
Second Year	23	4	..
Third Year	42	11	..
Fourth Year	52	7	7
Fifth Year	52	2	1
B.Sc. (Dent.) Candidates	5	..	..
Dental Nurses	16	1	..
Totals	208	32	8

(9) Departments.

The numbers examined in the different departments of the University, including those persons granted standing for military service, were as follows:

Arts:		
Fourth Year	472	
Third Year	565	
Second Year	700	
First Year	895	
Teachers' Course	270	
Graduates (Specialist Standing)	30	
		2,932
Medicine:		
Sixth Year	104	
Fifth Year	109	
Fourth Year	133	
Third Year	121	
Second Year	109	
First Year	90	
D.P.H.	9	
B.Sc. (Med.)	5	
		680
Applied Science and Engineering:		
Fourth Year	99	
Third Year	125	
Second Year	159	
First Year	184	
		567
Household Science		156
Education		470
Forestry		66
Music		28
Graduate Studies		100
Dentistry		248
Social Service		70
Public Health Nursing		31
Law		16
Pharmacy		227
Agriculture		33
Veterinary Science		19
Local Examinations in Music		21,285

APPENDIX D

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

The geographical distribution of students is as follows:

FACULTY OF ARTS

	University of Toronto	University College	Victoria College	Trinity College	St. Michael's College	Duplicates	Totals
Ontario: (1) Province....	391	521	435	128	113	16	1,572
(2) Toronto....	269	764	260	130	123	8	1,538
Nova Scotia............	4	..	1	3	..	..	8
New Brunswick.........	..	3	2	1	2	..	8
Prince Edward Island....	..	4	..	..	..	..	4
Quebec................	2	..	2	1	2	..	7
Manitoba..............	3	5	..	..	..	..	8
Saskatchewan...........	3	10	26	1	..	..	40
Alberta................	4	8	10	2	2	..	26
British Columbia........	4	7	1	2	..	..	14
Yukon.................	..	2	..	..	..	..	2
United States...........	5	26	5	9	26	4	67
Elsewhere..............	3	8	18	2	2	..	33
Duplicate registrations...	..	..	..	..	..	..	..
Totals.........	688	1,358	760	279	270	28	3,327

SUMMARY

	Faculty of Arts	Faculty of Medicine	Faculty of Applied Science and Engineering	Faculty of Household Science	Ontario College of Education	Faculty of Forestry	Faculty of Music	School of Graduate Studies	Faculty of Dentistry.	Department of Social Service	Department of Public Health Nursing	Course in Occupational Therapy	Course for Graduate Nurses	Registered Twice	TOTALS
Ontario:															
(1) Province....	1,572	312	288	58	303	29	8	132	123	31	126	15	14	32	2,979
(2) Toronto....	1,538	350	257	99	187	26	17	184	62	33	62	39	7	33	2,828
Nova Scotia........	8	2	1	..	4	..	..	11	2	5	..	..	..	2	31
New Brunswick.....	8	..	..	..	3	..	..	8	2	1	1	..	..	2	21
Prince Edward Island	4	..	1	..	..	1	..	1	1	..	..	..	..	..	8
Quebec............	7	2	1	1	4	3	1	10	1	1	1	..	..	..	32
Manitoba..........	8	2	1	..	6	1	..	7	23	2	..	1	..	..	51
Saskatchewan.......	40	20	14	2	9	..	4	12	21	..	5	..	..	1	126
Alberta............	26	8	8	2	2	1	1	5	2	1	..	..	..	1	55
British Columbia....	14	27	5	4	6	..	..	16	2	8	..	..	..	3	79
Yukon............	2	1	1	..	..	..	..	..	..	..	..	..	..	..	4
United States.......	67	11	4	1	8	..	3	13	7	..	..	..	..	..	114
Elsewhere..........	33	11	5	..	7	5	..	15	3	5	13	..	..	3	94
Totals......	3,327	746	586	167	539	66	34	414	249	87	208	55	21	77	6,422

The students from the Province of Ontario are distributed as follows:

	Faculty of Arts	Faculty of Medicine	Faculty of Applied Science and Engineering	Faculty of Household Science	Ontario College of Education	Faculty of Forestry	Faculty of Music	School of Graduate Studies	Faculty of Dentistry	Department of Social Service	Department of Public Health Nursing	Course in Occupational Therapy	Course for Graduate Nurses	Registered Twice	TOTALS
Algoma	14	9	7	..	1	1	..	..	..	..	5	..	1	2	36
Brant	36	9	10	1	5	..	..	6	..	..	3	..	1	1	70
Bruce	34	6	4	..	3	..	..	2	6	1	6	1	..	1	62
Carleton	63	8	7	5	21	1	..	8	9	..	1	..	..	3	120
Cochrane	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1
Dufferin	19	7	2	..	7	..	..	1	1	..	4	..	..	..	41
Dundas	12	..	..	..	5	..	..	1	1	..	1	..	..	..	20
Durham	28	7	2	..	1	..	2	1	..	1	3	..	..	1	44
Elgin	22	4	4	1	7	..	..	1	3	2	2	..	..	1	45
Essex	51	12	6	2	11	1	..	3	5	1	..	..	..	1	91
Frontenac	3	1	..	1	12	..	..	2	1	1	2	..	..	1	22
Glengarry	3	1	..	1	4	..	..	..	..	1	1	..	..	..	11
Grenville	8	1	1	..	3	..	..	3	..	1	..	..	..	..	17
Grey	46	5	10	3	5	..	..	5	3	1	8	2	..	..	88
Haldimand	28	5	9	1	4	..	..	1	2	..	..	..	..	..	50
Haliburton	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Halton	45	8	7	5	4	..	..	3	1	..	7	1	..	..	81
Hastings	18	7	3	..	4	..	..	1	3	..	5	1	..	..	42
Huron	50	12	8	1	6	2	..	5	3	2	3	..	..	1	91
Kenora	6	..	1	..	1	..	..	..	2	..	..	..	..	..	10
Kent	23	6	4	1	8	..	..	1	3	..	..	..	..	1	45
Lambton	27	5	2	1	5	1	..	6	5	..	1	..	..	..	53
Lanark	17	..	4	..	15	..	1	5	7	1	2	..	..	..	52
Leeds	13	1	2	1	4	1	..	..	2	..	..	..	..	..	24
Lennox & Addington	11	..	..	1	2	..	..	..	..	..	2	..	..	1	15
Lincoln	40	5	11	3	4	..	..	3	1	..	4	1	..	..	72
Manitoulin	6	..	1	..	..	..	..	..	..	..	..	..	..	..	7
Middlesex	21	2	9	2	27	1	1	12	5	2	..	..	1	1	82
Muskoka	16	2	7	..	3	..	..	3	2	..	..	..	..	..	33
Nipissing	10	12	2	1	7	..	..	1	2	..	1	3	..	1	38
Norfolk	16	9	2	..	3	..	..	1	4	..	2	1	..	1	37
Northumberland	28	5	3	1	4	..	..	3	2	..	2	..	..	1	47
Ontario	53	10	9	5	10	1	1	4	4	..	6	..	..	..	103
Oxford	26	6	12	..	6	2	..	..	..	..	2	..	..	..	54
Parry Sound	6	1	2	1	..	..	..	1	2	1	3	..	1	..	18
Peel	42	9	8	2	2	..	..	3	1	1	3	..	..	..	71
Perth	48	9	12	..	8	3	..	1	1	..	5	2	2	..	91
Peterborough	29	6	5	2	3	..	..	1	2	1	5	..	2	..	56
Prescott	2	..	..	..	5	..	..	..	1	..	..	..	..	..	8
Prince Edward	2	2	..	..	3	..	..	1	..	..	..	1	..	..	9
Rainy River	9	1	..	..	..	..	..	..	..	1	..	..	..	..	11
Renfrew	24	3	1	..	5	2	..	..	3	..	2	..	1	..	41
Russell	..	1	1	..	1	..	..	..	..	..	..	..	..	..	3
Simcoe	94	19	14	2	11	4	..	3	7	..	11	..	1	..	166
Stormont	9	1	1	..	3	..	..	..	..	..	..	..	..	..	14
Sudbury	8	..	1	1	..	1	..	..	..	..	..	..	..	..	11
Thunder Bay	34	4	12	..	4	2	1	..	4	1	..	..	..	..	62
Timiskaming	14	1	3	..	1	..	..	..	1	..	1	..	1	..	22
Victoria	20	5	3	1	1	..	..	1	..	..	5	..	..	..	36
Waterloo	64	12	12	1	6	..	..	5	3	..	3	..	1	3	104
Welland	41	12	6	1	9	..	..	3	3	..	..	..	1	2	74
Wellington	60	15	5	1	9	..	..	14	1	..	1	..	..	3	103
Wentworth	172	25	17	5	18	..	1	9	12	10	2	1	1	3	270
York	100	21	36	4	12	6	1	8	5	2	12	1	..	3	205
Toronto	1,538	350	257	99	187	26	17	184	62	33	62	39	7	33	2,828
Totals	3,110	662	545	157	490	55	25	316	185	64	188	54	21	65	5,807